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Great effort has been made to provide accurate and current information within this manual, although, errors occasionally go undetected. If you discover an error, please bring it to our attention so we may correct it. Anitech Systems, Inc. will not be held responsible for any inaccuracies or omissions, or any consequences resulting from them.

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The Media Pro® 4000 system in not intended for direct control in safety critical applications. It should be used in conjunction with a Programmable Logic Controller where safety is an issue.

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### Preface

Welcome to the Media Pro® ICM-4020 User's Operational Manual. Highlighted in this manual are the component features, installation, configuration, software operation, programming reference, examples of typical applications, and technical support information.

This document is provided so users of the Media Pro® 4000 can gain an understanding of the system design and implementation techniques. It is assumed the reader has a basic knowledge of typical show elements and their control requirements. In addition, a basic understanding of programming concepts will help the user understand Anitech System's powerful English based Media Pro® Control Language (MPCL).

For specific information about other Media Pro® 4000 products, please refer to the applicable user manual or on-line help system.

# **Related Publications**

The following documents contain additional information concerning ASI Media Pro<sup>®</sup> 4000 products. To obtain a copy of any of the documents listed below, contact ASI or visit our website.

Document	Description
ABM – 4010	Allen Bradley Remote Input/Output Module (RIO)
AOM – 4010	Analog Output Module - 16 Channel
APC – 4020	Animation Programming Console
ASM – 4030/4020	Analog Servo Module - 8 Channel /
	4 Channel with Compliance
DSM – 4020	Digital Sound Module with PCMCIA socket
HMR – 4000	Horizontal Module Rack - 5 Slot
ICM – 4020	Intelligent Control Module
IMC – 4020/4010	Integrated Module Controller
IOM – 4020	Input/Output Module - 16 Bit (24vdc)
LCM – 4020	Lighting Control Module (DMX 512)
SEM – 4020	Serial Expansion Module - 8 Channel (RS-232)
TCM – 4020	Time Code Module (SMPTE)
VMR – 4000	Vertical Module Rack - 18 Slot

# System Requirements

- IBM PC compatible computer running Windows 95 / 98 environment with 1 serial port at 19.2Kbps.
- > The PC should be at least Pentium 90 MHz, with a minimum of 16 Mbytes of Ram.
- The recommended minimum system is Pentium 400 MHz or faster with 32M RAM and a serial port at 115.2Kbps.
- An EPP 1284-1994 compatible parallel port is required for animation and is recommended for all other operations, but not required. Downloads for Animation and DSM sound files are much faster over the EPP parallel port.
- Approximately 12 Mbytes of disk space are required for the MP4000/APU4000 software. In addition, we recommend a minimum of 30 Mbytes storage for each show's application files. This size will vary depending on the show configuration and the size of the sound and animation files that may be required.

# **Getting Started**

The Media Pro® 4000 Software is provided on a set of floppy disks. To install the files, follow these directions:

- Place disk 1 into the floppy drive. Open the Explorer and browse FLOPPY
  [A:]
- $\Box$  Double click on **SETUP...** .**EXE**
- $\square$  Follow the on-screen installation instructions.
- □ The default directory **C:\MP4000** will be created and placed on the desktop.
- □ To enter the program, browse the directory and double click **MP4000.EXE**
- □ Current versions of the MP4000 software place an icon on the desktop, earlier versions (1998) do not.

# **Operating Environment**

All Media Pro<sup>®</sup> Products are manufactured to the highest standards. With proper care and maintenance, they should provide many years of trouble-free service.

To ensure that your equipment has the longest life possible, it should be placed in an area with good ventilation and low humidity, out of direct sunlight and away from heat sources or lamps. Never expose equipment to moisture of any sort. Always maintain a dust, dirt and smoke free environment.

Always remember that high temperature is the enemy of all electronic equipment.

#### **Environmental Conditions:**

Recommended Operating:	10° to 32° C (40° - 90° F)
Storage Temperature:	-40° to 60° C (-4° - 140° F)
Relative Humidity:	0 to 95% (Without Condensation)

### Warranty

Anitech Systems warrants this product to be free of manufacturing defects for 1 year from the date of purchase. At Anitech System's discretion, Anitech Systems will repair or replace a module that fails due to manufacturing defects.

The warranty does not cover shipping charges or modules damaged due to improper configuration, misapplication, misuse, abuse, accidents, or shipping damage.

### **Service Options**

Obtain a Return Materials Authorization by contacting Anitech Systems. The contact information for customer support follows:

E-mail	Mail@Anitech-Systems.com
Web	http://www.Anitech-Systems.com
<b>Telephone</b>	<b>(661)257-2184</b>
Fax	(661)257-2025

#### Non-Warranty Modules Returned for Repair-

Charges will be based on parts used, labor, and shipping charges. Make sure the product is properly packed and insured. Anitech Systems is not responsible for damage that occurs during shipment.

# **Section 1 – Introduction**

This manual is a technical reference manual for the ICM-4020 Intelligent Control Module. It contains specifications, diagrams and instructions to help with the implementation of systems using this product.

### **1.1 Module Description**

The ICM-4020 is the System Master/Slave Intelligent Control Module for Cue and Real Time Control Programming. The ICM is the nucleus module for the Media Pro<sup>®</sup> 4000 System and is required in each rack. Each ICM in the system is configured based on the devices and resources connected to it. As the elements of a show are completed, they are downloaded to Flash Memory on the ICM using the MP4000 software.

The ICM provides a built in Network called MP Net. This transformer isolated 1 Megabit network provides the inter-rack communications used in a multi-rack application of the Media Pro<sup>®</sup> 4000 System. The transformer isolation is imperative when racks are distributed across wide areas and numerous power sources.

Using the built-in Maintenance RS-232 port, a Hand Held Maintenance Terminal (HMT-4000) or laptop computer can communicate to any module in any rack in the system from any ICM on the Network.

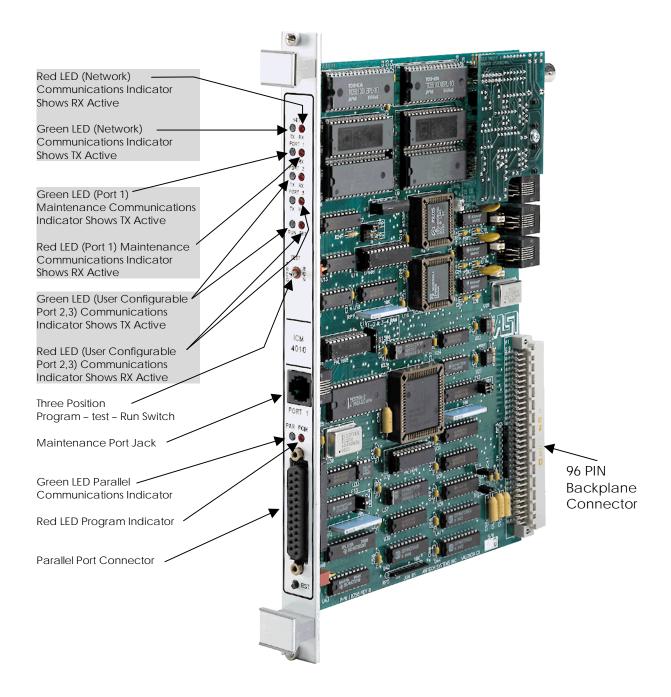
A parallel port is also provided on the ICM for high speed communications to any module in the Media Pro<sup>®</sup> 4000 System.

The ICM also provides (2) user configurable RS-232 Serial Ports to the Media Pro<sup>®</sup> 4000 System. These ports are typically used to interface to serial controlled devices such as Laser Disk Players, CD Players, Video Switchers, Lighting Control Boards and Programmable Logic Controllers. Each port is configurable for software and hardware protocol using the Media Pro<sup>®</sup> 4000 Software.

Since each port can be configured for a specific protocol, the MP4000 programmer doesn't have to learn a new language for each type of device. The programmer always uses the MPCL (Media Pro<sup>®</sup> Control Language) to access and control the device using the same language.

In addition, the ports can be used to control the Media Pro<sup>®</sup> System from an external device. Both ASCII and Binary control protocols are supported to initiate cue controls and commands to applicable modules.

#### Figure 1-1. ICM-4010



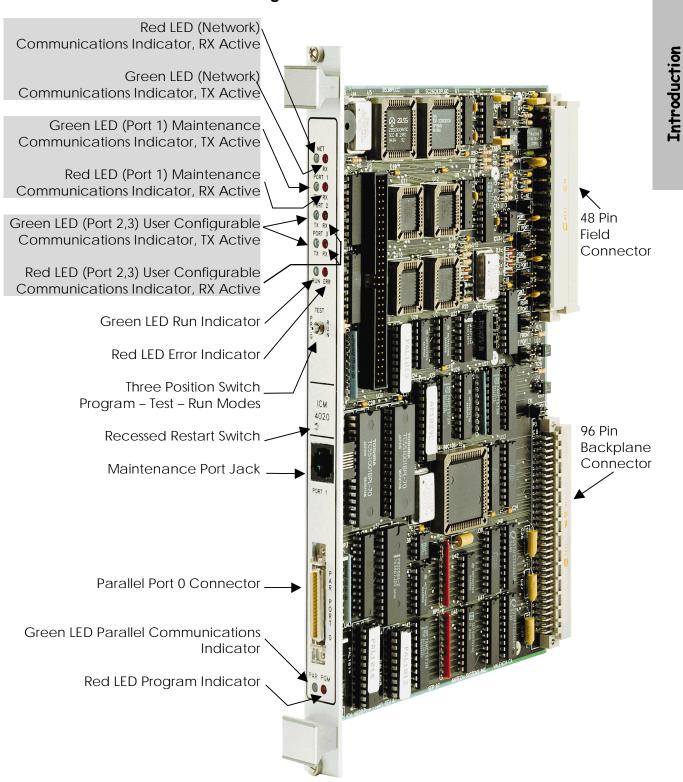


Figure 1-2. ICM-4020

### 1.2 Purpose and Intended Use

The ICM-4020 is the nucleus module for the entire MP4000 system and is required in each Rack in a multi-Rack application. Each ICM in the system is configured based on the devices and resources connected to it. As the elements of a show are completed they are downloaded to Flash Memory from the MP4000 software.

Only 1 ICM can be installed each rack (in the Processor Slot {17}).

The ICM-4020 is intended for the control of various equipment typically found in a theme show environment and is not intended for the control of safety critical applications or life safety equipment.

### **1.3 Specifications**

We are continually expanding or list of supported communications protocols. Current protocols available are:

- ✤ Allen Bradley PLC-5 DF1
- ✤ Allen Bradley SLC-5 DF1
  - Pioneer Laserdisk Players
  - Denon DN951FA/961FA CD Players
  - Sony CDK3600 Multidisk Changers
  - MIDI Show Control
  - ETC Light Boards
  - Omicron Video Switchers
  - Telemetrics Pan Tilt
  - BJ501 Audio Mixing Console
  - Sony Hi Definition Laser Disk Player
  - Peavey Media Matrix
  - Sony 9 Pin Protocol
  - Soundelux MR-16 Audio Matrix

- In addition to the previous list, hexadecimal characters may be sent to the communications port by using the \x escape sequence imbedded in the string message. See the Media Pro<sup>®</sup> 4000 Software Programming Manual for more information.
  - Baud Rates: 300, 1200, 2400, 4800, 9600, 19200, 31250 (MIDI), 38400 bps.
  - 7, or 8 data bits
  - 1 or 2 stop bits
  - No Parity, Odd Parity, or Even Parity
  - ➢ RS-232 Interface:
    - Transmit Data
    - Receive Data
    - Request to Send
    - Clear to Send
    - Selectable: Data set Ready, Data Terminal Ready, or <u>+12vdc@200ma</u>, Ground



# Section 2 – Preparation for Use

This section describes the board layout, jumper configurations, and switch setting selections. These user-defined configurations need to be set before the ICM will operate correctly.

# 2.1 Unpacking and Inspection

Inspect the shipping carton immediately upon receipt for evidence of mishandling during transit. If the shipping carton is severely damaged or water-stained, request that the carrier's agent be present when the carton is opened. If the carrier's agent is not present when the carton is opened and the contents are damaged, keep the carton and packaging materials for the agent's inspection.

It is suggested that all salvageable shipping cartons and packing material be retained for future use in the event the product must be shipped.

# 2.2 Installation Considerations

Choose which connector to use (see section 3.2 Keying and Connector Information for more information.)

Belden 9463 Blue Hose is recommended for the MP Net cable. An alternative is Category 5 type cable.

## 2.3 User Configurable Jumpers and Options

The diagrams on the following pages provide information on user configurable jumpers and options.

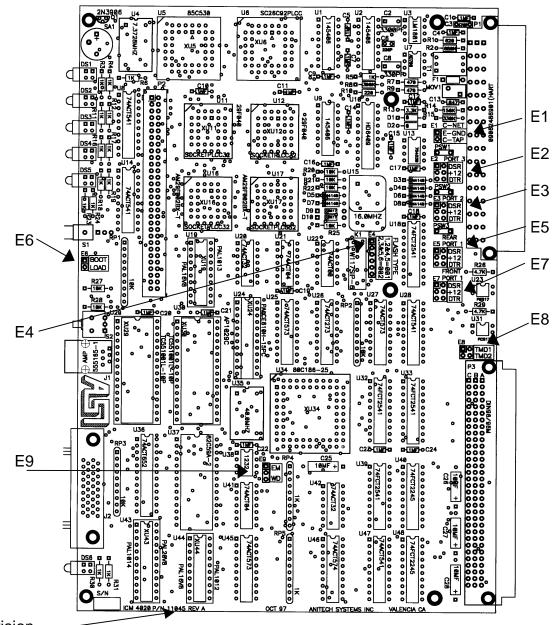
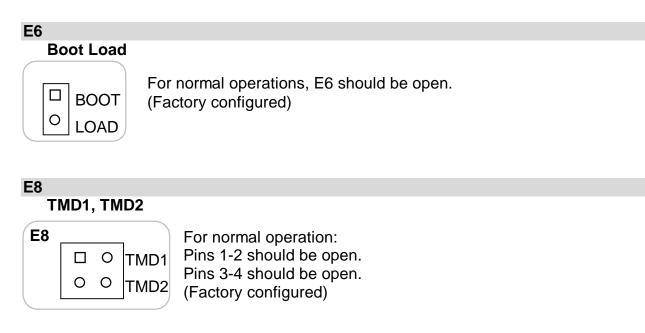


Figure 2-1. ICM-4020

Revision

# 2.3.1 Jumpers Settings and Options



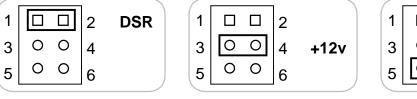
### E2, E3, E5, E7

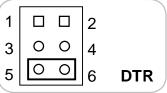
#### **RS-232 Serial Ports Communication Protocol**

1	П	2	DSR	☑ E2 - Port 3
			+12v	<ul> <li>☑ E3 - Port 2</li> <li>☑ E5 - Port 1, rear</li> </ul>
5			DTR	☑ E7 - Port 1, front

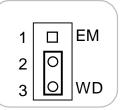
Place a jumper (shunt) across one of the following pin pairs for each serial port:

- > Pins 1 2 Uses Data Set Ready handshaking.
- Pins 3 4 Supplies +12v @ 200 ma out the serial port.
- > Pins 5 6 Uses Data Terminal Ready handshaking.





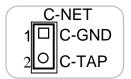
#### E9 Watchdog



For normal operations, place a shunt on jumper pins 2-3. (Factory configured)

E1

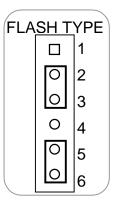
#### **C-NET**



For normal operations, place a jumper (shunt) on pins 1-2. (Factory configured)

#### **E4**

#### Flash Size



Jumpers are set to match the type of Flash Memory installed in U16 and U17. Typically, it is set for 29F002. (Factory configured)

28F001	Shunt on pins 1-2 and 4-5
29F001	Shunt on pins 2-3 and 5-6

# 2.3.2 Rack Addressing

The following jumper and switch are used together to specify the Rack Address for each Media Pro® Rack in the system. They are located on the rear panel of the rack. Please refer to the appropriate Rack User Manual for exact location.

#### E1

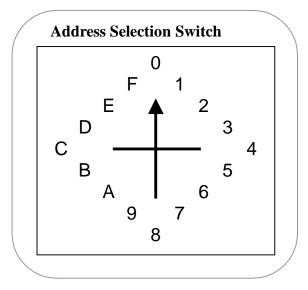
### **Address Selection Jumper**

	0	2
E	3X-	ŗ

- For Rack Addresses 0 to 15, E1: pins 1-2 should be open
- For Rack Addresses 16 to 31, E1: pins 1-2 should be Jumpered
- •

#### **S1**

### **Address Selection Switch**



Refer to figure 2-2 for settings.

Rack Address	S1 Switch Position	E1 Jumper
0	Set S1 to 0	Open
1	Set S1 to 1	Open
2	Set S1 to 2	Open
3	Set S1 to 3	Open
4	Set S1 to 4	Open
5	Set S1 to 5	Open
6	Set S1 to 6	Open
7	Set S1 to 7	Open
8	Set S1 to 8	Open
9	Set S1 to 9	Open
10	Set S1 to A	Open
11	Set S1 to B	Open
12	Set S1 to C	Open
13	Set S1 to D	Open
14	Set S1 to E	Open
15	Set S1 to F	Open
16	Set S1 to 0	Jumpered
17	Set S1 to 1	Jumpered
18	Set S1 to 2	Jumpered
19	Set S1 to 3	Jumpered
20	Set S1 to 4	Jumpered
21	Set S1 to 5	Jumpered
22	Set S1 to 6	Jumpered
23	Set S1 to 7	Jumpered
24	Set S1 to 8	Jumpered
25	Set S1 to 9	Jumpered
26	Set S1 to A	Jumpered
27	Set S1 to B	Jumpered
28	Set S1 to C	Jumpered
29	Set S1 to D	Jumpered
30	Set S1 to E	Jumpered
31	Set S1 to F	Jumpered

Figure 2-2. Rack Address Selection Table



# Section 3 – Installation

This section describes the considerations for installing the ICM. Typical pinout information is provided.

# 3.1 ICM Pinout Information

The following chart provides the pinout information for the ICM field wiring.

	d	b	Z			
2	V-Sync	V-Sync Ground	V-Sync			
4	MP Network +	MP Network Shield	MP Network -			
6	Port 2, Clear to Send, in	Port 2, Receive Data, in	Port 2, Ground			
8	Port 2, Transmit Data, out	Port 2, Request to Send, out	Port 2, DSR / +12 / DTR			
10	Port 3, Clear to Send, in	Port 3, Receive Data, in	Port 3, Ground			
12	Port 3, Transmit Data, out	Port 3, Request to Send, out	Port 3, DSR / +12 / DTR			
14	Port 1 {Maint}, CTS, in	Port 1 {Maint}, RD, in	Port 1 {Maint}, Gnd			
16	Port 1 {Maint}, TD, out	Port 1 {Maint}, RTS, out	Port 1 {Maint}, DSR / +12 / DTR			
18						
20						
22						
24						
26						
28						
30						
32						
	Rear View, Looking a ICM-4020 Male Pins					

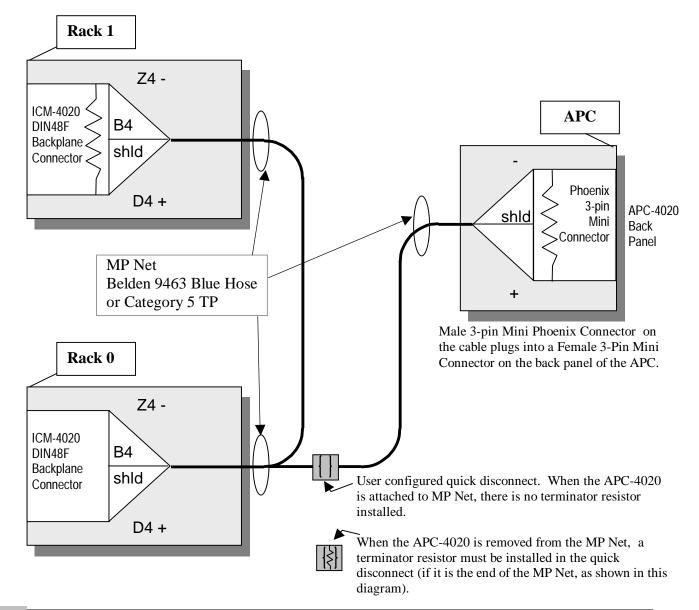
### Figure 3-1. ICM-4020 Pinout Information

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### 3.1.1 Media Pro® Network Connection

The Media Pro® Network is connected to the backplane of the ICM. It is hard-wired to the 48 pin backplane connector. The Racks and APC need to be addressed correctly in order for them to communicate. See the Jumpers Section (section 2.3.2), and the Rack Module User Manual for details.

It is recommended to implement a quick disconnect for the APC, so the unit can be disconnected when not being used. Refer to the following diagram for an example setup using an Animation Program Controller. Notice that Rack 0 of this example is in the middle of the net and <u>does not</u> have a terminating Resistor.



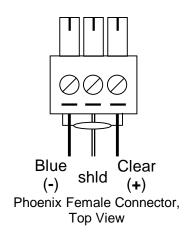
#### Figure 3-2a. MP Net Connections

- \* There are some important considerations when connecting the APC to the Media Pro® Net:
  - A 150 Ohm Terminating Resistor should be across the MP Net connector (+) and (-) pins at both <u>ends</u> of the network.
  - > No Terminating Resistor on Racks in the *middle* of the Network.
  - When the APC is removed from the MP Net, a terminating resistor must be placed in the Rack at the <u>end</u> of the Network. (In the example diagram, Figure 3-2a, the resistor would be placed in Rack 0.)
  - The APC may be connected to any rack in the network, but the network may NOT be starred. The Media Pro® Net topography must be maintained. When a animation console is used with a rack in the middle of a net, the APC must be connected with a rack on both sides, having the net flowing through the APC.
  - > The total network, including the connection to all racks may be up to 3000' of cable.
  - The connector for the APC end of the quick disconnect is supplied with the unit. Refer to figure 3-2c for details.

Rack0 Din48F	Rackn Din48F	APC	Wire color
pin d4 (+)	d4 (+)	(+)	Clear
pin b4 (shld)	b4 (shld)	(shld)	Un-sleeved
pin z4 (-)	z4 (-)	(-)	Blue

#### Figure 3-2b. APC-4020 to MP Net Wiring Pinout





Media Pro Net

Phoenix Male Connector, APC Rear Panel View

# 3.2 Keying and Connector Information

The **ICM** key pin(s) should be inserted at the intersection between column b & z and between row 30 & 32.

Note: If the key pin(s) are installed in the female field connector, the ICM's male connector must have holes drilled at the appropriate places for the connectors to mate.

Rear View, Looking at ICM-4020 Male Contacts The Key is located at the intersection between column b				Front View, Looking at Field Connector Female Contacts The Key is located at the intersection between column b & z, & between row 30 & 32.					
& z, & between row 30 & 32.									
d	0	b	0	z	Z		b		d
	0		0		<u> </u>	0		0	
	2 0		-			~		2	
			0			0		0	
	4		-					4	
	0 6		0			0		0 6	
	0		0			0		0	
		1				0			
	8 O		0			0		8 0	
1		1		1		0			-
	10 O		-			0		10	
-	_		0			0		0	
	12 0		0			0		12 0	
1	14	1				0	-	14	
	0		0			0		0	
1	16	1		1	1	0	-	16	-
	0		0			0		0	
1	18	1					1	18	-
- 1 -	0		0	- 1		0		0	
1	20	1		1	1	0	1	20	-
- 1	0		0	- 1		0		0	
1	22	1		1	1		1	22	1
	0		0			0	<b>I</b>	0	<b>I</b>
1	24	1		1	1	<u> </u>	1	24	1
	0		0			0		0	
1	26	1		1	1	<u> </u>	1	26	1
	0		0			0	-	0	
	28	I			1		I	28	1
	0		0			0		0	-
	30	I	1		1	-	I	30	I
	0	- 1	•	<b>'</b>		٠		0	
1	32	I			1		I	32	I
Legend:	1	=	Contact		Legend:	I	=	Contact	-
	•	=	Key Hole	Location		•	=	Key Pin L	ocation
	0	=	unused p			0	=	unused p	

#### Figure 3-3. ICM-4020 Keying Information

# 3.3 Installation Example

The ICM-4020 can control many devices. The following chart shows the pinouts to industry standard RJ11-6 wire Jacks, and adapters for a few devices.

4020	Harting						
ICM	Din 48F						
VSync	d	2					
MP NET+	d	4					
VSync Gnd	b	2					
Net Shld	b	4					
VSync	Z	2					
MP NET-	Z	4					
CTS<	d	6	2	3	RTS		DB25M:
TXD>	d	8	2	4	RECV	3	Allen Bradley
RXD<	b	6	2	5	XMIT	2	PLC5 DF1
RTS>	b	8	2	2	CTS		
Ground	Z	6	2	6	Ground	7	
Power	Z	8	2	1	Power		
CTS<	d	10	3	3	RTS	4	DA15M:
TXD>	d	12	3	4	RECV	3	Pioneer LDP
RXD<	b	10	3	5	XMIT	2	4400 / 8000
RTS>	b	12	3	2	CTS		
Ground	Z	10	3	6	Ground	1	
Power	Z	12	3	1	Power		
CTS<	d	14	1	3	RTS	7	DE9F:
TXD>	d	16	1	4	RECV	2	IBM PC
RXD<	b	14	1	5	XMIT	3	
RTS>	b	16	1	2	CTS	8	
Ground	Z	14	1	6	Ground	5	
Power	Z	16	1	1	Power		
			RJ-11-6 Jack		Dev	vice	Device
			Pinout		RS-232	Pinout	

### Figure 3-4. Wiring Example

### 3.3.1 Allen-Bradley SLC500 Example Configuration

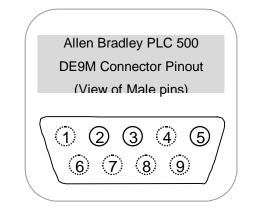
The following example shows how the ICM connects to the Allen Bradley SLC 500. On the following page there is a sample wiring diagram for connection to port 2. For more details connecting the ICM to other devices, see the ICM-4020 User Manual.

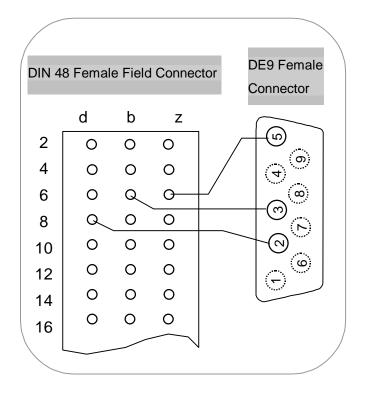
	d	b	Z
2	V-sync	Ground	V-Sync
4	+ MP Network	Shield MP Network	- MP Network
6	Clear to Send In	Receive Data In	Ground
	Port 2	Port 2	Port 2
8	Transmit Data Out	Request to Send Data Out	DSR / +12v /DTR
	Port 2	Port 2	Port 2
10	Clear to Send In	Receive Data In	Ground
	Port 3	Port 3	Port 3
12	Transmit Data Out	Request to Send Data Out	DSR / +12v /DTR
	Port 3	Port 3	Port 3
14	Clear to Send In	Receive Data In	Ground
	Port 1	Port 1	Port 1
16	Transmit Data Out	Request to Send Data Out	DSR / +12v /DTR
	Port 1	Port 1	Port 1

Figure 3-5. ABM Backplane Connector Pinout

Pin	Signal	Direction	Description
1	DCD	Input	Data Carrier Detect
2	RXD	Input	Receive Data
3	TXD	Output	Transmit Data
4	DTR	Output	Data Terminal Ready
5	COM	Shared	Common Return (signal ground)
6	DSR	Input	Data Set Ready
7	RTS	Output	Request to Send
8	CTS	Input	Clear to Send
9	NC		Not Connected







# 3.4 Support Tools and Part Numbers

The following connectors	or equivalents m	ay be used:
$\mathcal{O}$	1	2

Part	Number
Din48F connector (Z-Rail mount) (Solder Tail)	Harting 09-06-248-6823
Din48F connector (Z-Rail mount) (Wire Trap)	Harting 09-06-248-6821
Din48F connector (Z-Rail mount) (Crimp Pins required)	Harting 09-06-248-3201
(50) crimp pins (for above connector) 26-20 awg	Harting 09-06-000-8481
(50) crimp pins (for above connector) 20-16 awg	Harting 09-06-000-8482
Crimping tool for 26-20 awg pins	Harting 09-99-000-0076
Crimping tool for 20-16 awg pins	Harting 09-99-000-0077
Pin Locator (for above crimping tools)	Harting 09-99-000-0086
Crimp Pin Insertion Tool	Harting 09-99-000-0088
Crimp Pin Removal Tool	Harting 09-99-000-0087
*(2) M2.5X6 Screws	*Schroff 21100-146
Code Pin (metal key post)	Harting 09-06-000-9950
Code Pin Insertion Tool	Harting 09-99-000-0103
3-pin mini connector, male (MP Net connector)	Phoenix 18 03 581 V0
3-pin mini connector, female (MP Net connector)	Phoenix 18 03 280 V0
6 wire modular jack to DE9M, 9 pin Male	Unicom DEM25M
adapter	
6 wire modular jack to DE9F, 9 pin Female adapter	Unicom DEM25F
6 wire modular jack to DA15M, 15 pin Male adapter	Unicom DAM25M
6 wire modular jack to DA15F, 15 pin Female adapter	Unicom DAM25F
6 wire modular jack to DB25M, 25 pin Male adapter	Unicom DBM25M
6 wire modular jack to DB25F, 25 pin Female adapter	Unicom DBM25F
6 wire modular plug (requires pliers to terminate) – box of 25	Thomas & Betts TCNP6
6 wire modular plug for flat oval standard wire (box of 100) requires termination tool 231652	AMP 5-641337-3 00
Modular termination tool (includes 6 wire DIE-Blue, 853400-8) used to terminate 641337 modular plugs	AMP 2-231652-8

\*These come in bags of 100. Only 2 screws are needed per ICM.

# 3.4.1 Field Connector Kit

A kit for the field connector is available from Anitech Systems which may be purchased separately. Refer to the Product Price List and/or contact ASI to order the item.

**DIN-F48C** – Contains the following items:

<u>Qty</u>	Description	Part Number
1	Din 48F Pin Connector	Harting 09-06-248-3201
50	Crimp Pins	Harting 09-06-000-8481
3	Mounting Screws	Schroff 21100-146
	-	

## 3.5 Serial and Parallel Configuration for MP4000

This section is intended to help with configuration and troubleshooting of Serial and Parallel Ports that do not appear to work correctly with the MP4000 Software.

NOTE: Changes to the BIOS and Windows Device Manager should only be performed by PC/Windows technically competent personnel. Incorrect changes can result in a completely inoperable PC.

#### Restrictions of use in this section:

The restrictions in this document were used for the sake of simplicity, and ease of configuration when using the MP-4000 software on a PC to communicate with a Media Pro 4000 Module. It is possible for the MP-4000 software to function properly with other PC and software configurations.

#### A- PC Requirements:

- 1) PC compatible computer (Laptop or Desktop) running Windows 95 or 98.
- 2) The PC should be at least a Pentiun-90, with a minimum of sixteen (16) MegaBytes of RAM
- 3) Recommend the PC be at least a Pentiun-133, with a minimum of sixty four (64) MegaBytes of RAM.
- 4) One (1) RS232 Serial Port Capable of 19.2kbps.
- 5) Recommended serial port capable of 115.2 Kbps.
- 6) An EPP 1284 compatible parallel port is required for animating with the APC-4010/20.
- 7) Recommended EPP 1284 compatible parallel port for all other operations (it's much faster than serial).

### 3.5.1 Troubleshooting PC Port BIOS CMOS Configuration

NOTE AND DOCUMENT ORIGINAL SETTINGS BEFORE MAKING ANY CHANGES TO THE BIOS CMOS SETUP, OR THE WINDOWS DEVICE MANAGER

A-There are so many different ways to get into the BIOS CMOS configuration for the wide variety of BIOS, that all of them can not be listed here.

- 1) Watch the screen while the PC does it's POST test, alot of BIOS will tell you which key to hit to enter the BIOS setup.
  - a) If the POST test is not visible, or the POST test does not show which keys to hit, check the Manual for the Motherboard.
  - b) If the POST test and Manual don't tell you the BIOS entry key combinations, try these popular BIOS entry Keystrokes:
    - (1) F1
    - (2) F2
    - (3) F10
    - (4) ESC
    - (5) CTRL ALT S
    - (6) CTRL ALT ESC
    - (7) CTRL ALT INS
    - (8) DEL
- 2) Hit BIOS entry key / key combination while the PC is performing the POST test (checking memory, ...).
  - a) The POST test is very soon after the PC is powered on or reset.
  - b) The POST test is way before the Windows LOGO appears.
  - c) Sometimes BIOS CMOS settings con only be accessed by an application run under DOS or Windows. Consult the Computer or Motherboard Manual for the appropriate application to access the BIOS CMOS settings.
- B- Check the BIOS CMOS Serial Port configuration.
  - 1) Make Certain that the Serial Com Ports are Enabled.
  - 2) Make note of the Serial Port configurations, the I/O & irq configuration will need to be compared to the Windows 95/98 device settings.
  - 3) Refer to the Manual for the Mother board for recommended settings.
  - 4) Typical BIOS CMOS Com Port Settings
    - a) Com1: I/O 3F8, irq 4
    - b) Com2: I/O 2F8, irq 3
    - c) Com3: I/O 3E8, irq 4
    - d) Com4: I/O 2E8, irq 3

- C- Check the BIOS CMOS Parallel Port configuration.
  - 1) Make certain that the Parallel Ports are Enabled.
  - 2) There are many different parallel port type selections between the variety of BIOS on motherboards.
  - 3) The Parallel Port Should be set to EPP if that selection is available.
    - a) If the BIOS has no Parallel Port Type selection options, this section can be skipped.
    - b) 1st Alternative If EPP is not available, select EPP & ECP.
    - c) 2nd Alternative If EPP is not available, select Bi-directional.
    - d) 3rd Alternative If EPP is not available, select PS/2.
    - e) 4th Alternative If EPP is not available, select ECP
    - f) 5th Alternative If EPP is not available, select Compatible.
    - g) 6th Alternative If EPP is not available, select Standard.
    - h) 7th Alternative If EPP is not available, select AT.
    - i) If none of the above parallel port types is available, the remaining types Output Only, and Unidirectional will not work.
      - (1) A EPP compatible bi-directional parallel port is the only type of parallel port that will work correctly with the MP4000 Hardware and Software.
  - 4) Make note of the Parallel Port configurations, the configuration will need to be compared to the Windows 95/98 device settings.
  - 5) Refer to the Manual for the Mother board for recommended input/output and interrupt settings
  - 6) Typical BIOS CMOS Com Port Settings
    - a) LPT1: I/O 378 or 3BC, irq 7
    - b) LPT2: I/O 278 or 378, irq 5 or 7
    - c) LPT3: I/O 3BC or 278, irq 7 or 5 or 9
  - 7) If any intended changes were made to the BIOS CMOS Setup Be certain to save the changes when exiting the Setup.

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### 3.5.2 Troubleshooting PC Port Windows Device Configuration

- A- Check the Windows Device Configuration for the Serial Com Ports.
  - 1) In Windows 95/98 click on Start Menu, Settings, Control Panel, System, Device Manager, Ports Com and LPT, Select a Serial Port.
    - a) In Windows 95, General Tab, Make certain the device usage has the current configuration selected.
    - b) In Windows 98, General Tab, Make certain the device usage does not have the disable in this hardware profile selected
    - c) Port settings Tab
      - (1) 115,200 Bits Per Second,
      - (2) 8 Data Bits
      - (3) No Parity
      - (4) 1 Stop Bit
      - (5) Hardware Flow Control
    - d) Port Settings Tab, Advanced, If the Serial com Ports have 16550 compatible UARTs
      - (1) Select Use FIFO buffers
      - (2) Set the Transmit Buffer to high (14)
      - (3) Set the Receive Buffer to high (16)
      - (4) If the serial ports are not 16550 compatible, or don't seem to work correctly with the above settings, Uncheck the use FIFO buffer.
    - e) Resources Tab -
      - (1) Under most conditions Use automatic settings will work properly.
      - (2) IF "automatic settings" does not seem to work, set the input/output Range and Interrupt Request to match the BIOS CMOS settings.
    - f) Windows may require restarting after making changes before the changes are in effect.
    - g) General Tab, check the Device Status, it should say "This device is working properly".
    - h) Resource Tab, check the Conflicting Device List, it should say "No Conflicts".
- B- Check the Windows Device Configuration for the Parallel Ports.
  - 1) In Windows 95/98 click on Start Menu, Settings, Control Panel, System, Device Manager, Ports Com and LPT, Select a Parallel Port.
    - a) In Windows 95, General Tab, Make certain the device usage has the current configuration selected.
    - b) In Windows 98, General Tab, Make certain the device usage does not have the disable in this hardware profile selected.
    - c) Resources Tab -
      - (1) Under most conditions Use automatic settings will work properly.
      - (2) IF automatic settings does not seem to work, set the input/output Range and Interrupt Request to match the BIOS CMOS settings.
    - d) Windows may require restarting after making changes before the changes are in effect.

- e) General Tab, check the Device Status, it should say "This device is working properly".
- f) Resource Tab, check the Conflicting Device List, it should say "No Conflicts".

### 3.5.3 Media Pro 4000 Software Communications Configuration

- A- Communications can be configured in the MP4000 software under the options menu, communications.
- B- When there are no Media Pro 4000 Modules connected to the PC, Comm Disable can be selected to prevent the software from trying to communicate with the hardware, and receiving communications errors.
- C- For Serial Com Port Communications -
  - 1) For Normal operations, the PC Serial Port should be connected to the Port 1 connector (maintenance port) on a ICM.
  - 2) Select a Serial Port that is correctly configured in both the BIOS CMOS, and Windows Device Manager.
  - 3) Select 115,2000 If your Serial Port works correctly at 115200bps.
- D- For Parallel Port Communications -
  - 1) For Normal operations, the PC Parallel Port should be connected to the Port 0 connector (parallel port) on a ICM.
  - 2) Select a Parallel Port that is correctly configured in both the BIOS CMOS, and Windows Device Manager.
  - 3) Make certain the correct I/O Address is selected (matching the BIOS CMOS & Windows Device Manager).

### 3.5.4 Troubleshooting MP4000 Communications

- A- Checking Minimal MP4000 communications -
  - 1) Make certain MP4000 communications is configured correctly.
  - 2) Make certain the correct cable is connected to the correct PC port.
  - 3) Make certain the correct cable is connected to the correct Media Pro port on the ICM.
  - 4) Make certain the VMR or HMR Rack is set to rack 0.
    - a) The rack address is determined by a rotary switchand a jumper on the VMR or HMR backplane.
      - (1) The rotary switch should be set to 0.
      - (2) The Jumper should be Open.
  - 5) Make certain no other racks are connected to the Media Pro Network on the ICM DIN-F48C Field connector (row 4).
  - 6) Create a New MP4000 Show.
  - 7) Turn on the MP4000 Rack.
  - 8) Put the front panel switch in the "PROG" position.
  - 9) The Run LED (green) should be blinking slowly.
  - 10) Left click on the ICM in Rack 0.
    - a) The Firmware Versions of the ICM should appear in the right window.
      - (1) The Display should be similar to below ------ MODULE FIRMWARE ------ICMBT228.COD - 03/04/98 09:43 3220116F.COD - 01/29/99 16:15
    - b) Look at the ICM indicators that is connected to the PC.
      - (1) During Serial Communications, the Port 1 RX LED (red) will blink when the ICM receives serial data from the PC.
      - (2) During Serial Communications, the Port 1 TX LED (green) will blink when the ICM transmits serial data to the PC.
      - (3) During Parallel Communications, the PAR LED (green) will blink when the ICM receives or transmits parallel data.

- c) Make certain the cable's pinout is correct.
  - (1) For the Parallel Cable
    - (a) Make certain the cable meets the IEEE 1284 EPP standard
    - (b) The PC end should have a 1284-A Plug (DB25 Male)
    - (c) The ICM end should have a 1284-C Plug (miniature 36-pin Centronics)
  - (1) For the Serial Cable
    - (a) PC DE9 Female Cable End
    - (b) ICM RJ11-6 wire Modular Plug Cable End
    - (c) Pinout

ICM RJ11	pin	pin	DE9F PC
+12vdc power	1		no connection
RTS Output	2	8	Input CTS
CTS Input	3	7	Output RTS
TXD Output	4	2	Input RXD
RXD Input	5	3	Output TXD
Ground	6	5	Ground



# Section 4 – Module Operation

This section describes the operating modes of the module. It includes fault conditions, indicators, and troubleshooting information.

# 4.1 Normal Operations

- □ The Transmit (Green) LED will flash when the ICM sends data to external devices.
- The Receive (Red) LED will flash when data is received from external devices.
- □ The Transmit (Green) LED, and the Receive (Red) LED, indicators will vary in intensity depending on the data being transmitted or received.

# 4.2 Fault Conditions

- □ The Error LED (Red) is ON.
- □ The Communications LED (Green) is OFF, or ON Solid.

# 4.3 Indicators

The following chart displays indicator information.

#### Figure 4.1. ICM-4020 Indicators

	In	dication	Description	Probable Cause	Recommended Action
0	OFF	Port Transmit Indicator {Green}	Normal Condition	Not Transmitting	
0	ON	Port Transmit Indicator {Green}	Normal Condition	Transmitting	
0	OFF	Port Receive Indicator {Red}	Normal Condition	Not Receiving	
0	ON	Port Receive Indicator {Red}		Receiving	
0	OFF	Parallel Port Communication Indicator {Green}	Normal Condition	No Parallel Port Communication is Occurring	
*	Blinking	Parallel Port Communication Indicator {Green}	Normal Condition	Parallel Port Communication is Occurring	
0	ON	Parallel Port Communication Indicator {Green}	Abnormal Condition		
0	OFF	PGM {Programming}	Normal Condition	The ICM is not in Program Mode.	
0	ON Solid		Programming	The ICM is in Program Mode.	
*	Blinking	PGM {Programming}	Cue(s) in RAM	The ICM has Cue(s) Downloaded into RAM	Download Cues to flash to permanently store programming changes.
*	Blinking Slow	Run {Green}	Normal Condition	The ICM is Running.	
*	Blinking Fast	Run {Green}	Normal Condition	The ICM is Transmitting Animation Data or Commands to Peripherals.	
0	OFF or	Run {Green}	Abnormal Condition	The ICM is NOT Running	<ol> <li>Make certain that the ICM is fully seated in its slot.</li> <li>Make certain that the Module Rack is Powered, and Turned on.</li> </ol>
0	ON Solid	Run {Green}			<ol> <li>Make certain no downloads, are occurring.</li> </ol>

# 4.4 Troubleshooting

The following table (continued on the next page) identifies troubleshooting problems and solutions for the ICM-4020.

Problem	Solution
Module will not mate with the field connector.	<ol> <li>Check the orientation of the field connector. Make sure that pin 1 is at the top.</li> <li>Check the field connector for proper mounting and position on the rear z- rails.</li> <li>Check the keying of both connectors. Make sure you do not connect the ICM to a connector wired for other peripherals (damage may occur).</li> <li>Check for bent pins on the male connector, or plugged sockets on the female connector.</li> </ol>

Problem	Solution
The Communications LED (Green) is OFF, or ON SOLID The ICM is NOT Running.	<ol> <li>Make certain that the ICM is fully seated in its slot.</li> </ol>
·····g.	<ol> <li>Make certain that the Module Rack is Powered, and Turned on.</li> </ol>
	<ol> <li>Make certain no downloads, are occurring.</li> </ol>

Problem	So	lution
The control device is not responding to commands:	1.	
	2.	Watch the Port's LEDs. When the device is sent a command, the TX (Green) LED should flash.
	3.	Make certain that the Port has the correct settings for Alias, Protocol, Baud rate, Parity, Data bit, Stop bit, etc.
	4.	Make certain that the controlled device has the correct settings for the Protocol, Baud rate, Parity, Data bit, Stop bit, etc.
	5.	Check the pinout from the ICM to the device being controlled.
	6.	Do a continuity check of the cable going from the ICM to the controlled device.

Problem	Solution
Controlled device responds to the commands, but time out errors are occurring:	<ol> <li>The protocol probably requires a response from the device. Check the Media Pro<sup>®</sup> 4000 Software Programming Manual to see if the Protocol requires a response.</li> <li>Check the manual for the controlled device and see if it is supposed to respond after receiving a command.</li> <li>Watch the Port's LEDs. When the device is sent a command and the TX (Green) LED flashes, if the RX (Red) LED does not light soon after, then the ICM is not receiving a response.</li> <li>Check the pinout from the ICM to the device being controlled.</li> <li>Do a continuity check of the cable going from the ICM to the controlled device.</li> </ol>

Problem	Solution
Controlled device responds to some commands:	<ol> <li>Make certain the cue commands are properly formatted for the device being controlled.</li> <li>Check the manual for the device being controlled. Make certain that the cues are not sending commands to the device faster than it will accept them. (For example, a Pioneer Laser Disk Player may not accept a command for up to a few seconds after a previous command, depending on the player's current status and the previous command's execution time.</li> <li>Watch the Port's LEDs. When the device is sent a command, the TX (Green) LED should flash. If the TX LED flashes, the ICM is trying to communicate with the device.</li> </ol>

# 4.5 Maintenance

 $\hfill\square$  No normal or scheduled maintenance is required.

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# Section 5 – Programming

The ICM provides the control, memory, and communications functions for the Media Pro<sup>®</sup> 4000 system. Each module contains personality information that is stored in non-volatile Flash Memory on each unit. This memory is divided into three sections: Module Based Code, Parameters, and Show Specific Data (if applicable). This feature allows for easy field

#### system *extensibility*.

The *Module Based Code* memory is that area that contains the on board processor executable software for the specific module. This software dictates the module functionality and can be easily upgraded in the field via a PC or Laptop using a diagnostic download utility. This means that as code improvements or functional enhancements are required, they can be done by the user and do not have to be removed and returned to the factory. System updates are available via CompuServe or the Internet.

The *Parameters Based Data* memory is used to store user settings of options provided by the specific module. Communications ports configuration is stored in this region. All parameters are set by the Media Pro<sup>®</sup> Software utilities and downloaded from a PC or Laptop.

The *Specific Show Data* memory stores an actual application resource. These resources can be thought of like a video laser disk. Each resource can be played, stopped, stepped, etc. Depending on the type of resource, it could be coming from a DSM card in the form of an Audio Sound, from an ICM memory for Animated Figures, or DMX Data from a LCM to control lighting. In all cases, the control of these devices is done with the same Media Pro<sup>®</sup> Control Language (MPCL) used in the Media Pro<sup>®</sup> Cues.

# 5.1 Module Programming Functions

- Communication Protocols
- Baud Rates
- Data Bits
- **Given Stop Bits**
- Parity

Depending on the protocol, additional settings may be present (for example, the Allen-Bradley DF1 protocol requires additional information relating to the PLC address, the starting data address to transfer, the amount of data to transfer, the related Media Pro<sup>®</sup> addresses, etc.).

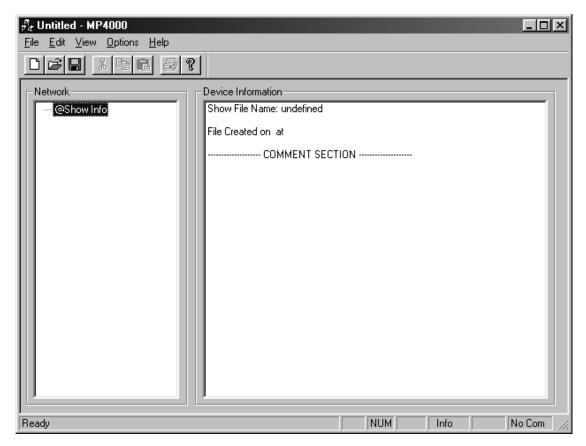
# 5.2 Software Configuration

- The IMC must be properly configured, and downloaded by the MP4000 Utility Software for proper operation. Appropriate physical configuration and connections are necessary to ensure proper operation (refer to sections 2 & 3 for details).
- The Cues are programmed using the Media Pro® Control Language or MPCL. This language was developed by Anitech Systems and is loosely based on the Media Control Interface or MCI specification created by Microsoft. It is designed to allow numerous devices to be controlled by a common set of verbs and tokens. This allows a designer to learn one syntax no matter what type of object is being controlled.
- Each Module in the Media Pro® Family can contain up to (32) addressable ports. Addressing is zero based (ports 0 through 31). For instance, an IOM has two 8 bit digital ports referenced as Port 0 and Port 1. The DSM has two audio ports referenced as Port 0 for the Left Port and Port 1 for the Right Port. In the case of the SEM, each of the 8 serial ports are directly addressable as Port 0 to Port 7. This allows multiple resources, or ports, to be identified on a module within a given Rack and Slot location.
- The basic concept of MPCL is that an object, whether it is a serial device, solid state audio track, internal variable, or logical channel, can be referenced in a common way. These references always contain a Type and an Address. A reference can be made directly or by using an Alias Name.

\*See the Media Pro® 4000 User's Operation & Programming Manual for more information.

# 5.3 Starting the Media Pro® Software

From the Windows desktop, highlight the **MP4000** icon and click to open the program. The following screen appears:



The buttons and icons on the screen are standard Windows 95/98 functions. At the top left of the screen is the name of the current file in use, in this case it is **Untitled – MP4000**.

The **Network** pane (box on the left) displays the physical configuration of the network. The **Device Information** pane displays the current show file being processed. The status line at the bottom of the screen displays messages relative to the file in process.

# 5.4 Configuring the System Modules

Before the system software is configured, it is recommended that the programmer and/or system designer write down the physical layout. You will need to know what devices will be attached to which modules, the names of the aliases and routines to be used, etc. Once that has all been established it is time to configure the software.

### 5.4.1 Opening Show File

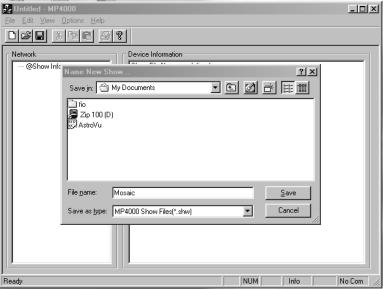
Show files contain all information relating to a show. It includes the system configuration and the programming (cues). There are two ways to open a show file: define a **new** show or **open** an existing show.

#### New Show –

Select New from the File pulldown menu. A message window appears and prompts for the show file name:

For this example, the show name is **Mosaic**. Type in the filename then click **Save**.

All show files are given the extension .**shw**.

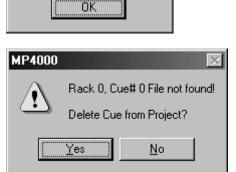


MP4000

**<u>NOTE</u>**: Show files must *not* have Read only properties. If *any* of the show files are **READ ONLY** then error messages appear when trying to open an existing show file.

All show files <u>must have</u> read/write access in order to use them with the MP4000 software.

Exit the MP4000 software and make all show files accessible, by either changing the file properties or by placing them on a drive that has read/write capabilities. Refer to Microsoft Windows Manual for details about file attributes.

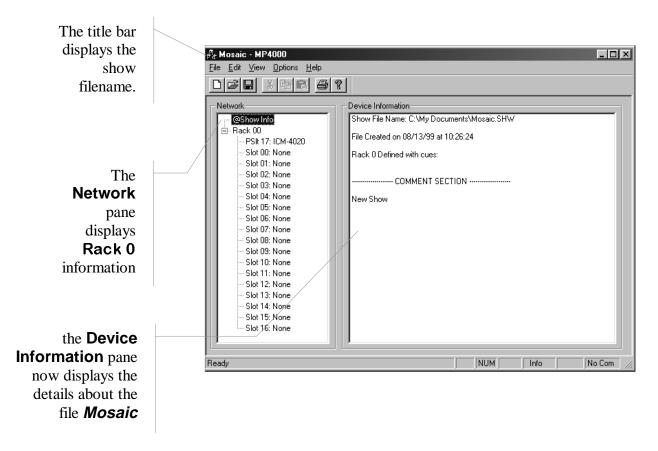


File Access Denied

X

The first step in defining a show is to configure the physical layout.

The ICM is the controller of the system and is the first module to be configured. This section will show how to set-up the ICM configuration in the Media Pro® 4000 software. For the other modules, please refer to that module's User Manual.



The next step is to configure the system.

### 5.4.2 ICM System Configuration

There are two methods of configuring the system, automatically or manually.

#### Manually –

To manually configure the system (when the rack is not connected or available), left click to select the slot; then right click to configure it. The device popdown menu appears.

A list of modules is displayed. Highlight and click on the desired module. The module is assigned to the slot and a message appears in the Device Information window:

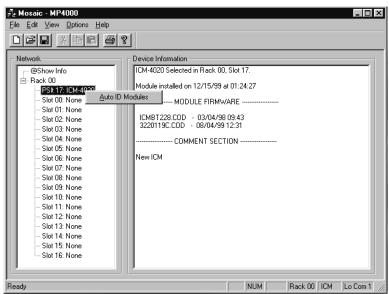
Slot *n* Module Not Present or Wrong Type! Module Firmware Info Not Available

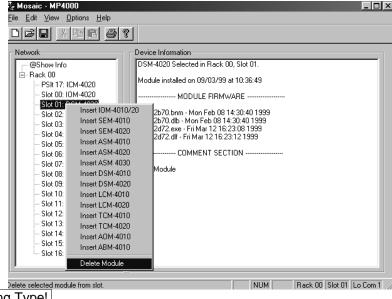
# Automatically –

If the rack you want to configure is available (installed and connected correctly), then the MP4000 software will automatically configure the system.

Left click on the P SLOT of the rack to highlight the selection.

Right click on the P SLOT, and a drop down menu appears. Left click on the menu and the configuration information will be read from the modules and then placed in the Network Pane.





When a device is added and the software does not find it, a message will display in the Device Information pane:

Module Not Present or Wrong Type! Firmware not Available

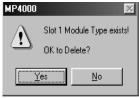
It may be added and configured even if it is not found. Then the information can be downloaded after the module is physically installed.

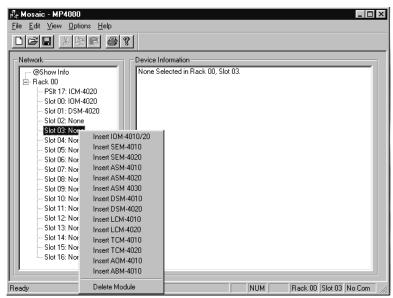
	?	
Network	Device Information LCM-4010 Selected in Rack 00, Slot 03. Module installed on 09/03/99 at 09:57:27 	

If a module needs to be removed from the rack configuration, highlight and select the appropriate slot, then right click to bring the device selection list on screen. At the bottom, highlight and right click on

#### Delete Module

A warning message appears:





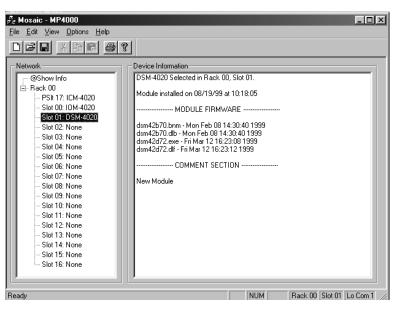
Click on the Yes button. The Module is removed from the list of devices in the rack. Programming

41

After the modules have been configured, the information about the module can be displayed in the Device Information pane.

Select and highlight the module to review and right click, the following type of information will be displayed:

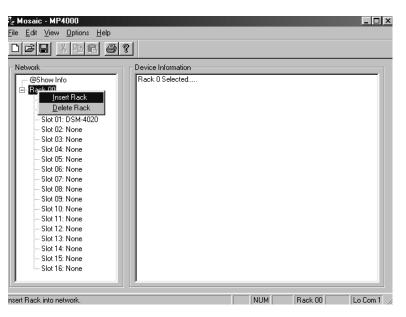
- The device model, rack and slot identification
- The date of installation
- The firmware revisions.



### 5.4.3 Configuring Multiple Racks

In systems that have more than one rack for their purpose, each rack must be configured in the ICM software. Before the software will recognize the racks, three steps must be taken:

- Connect the racks together
  - There can be a maximum of 32 racks
  - Refer to the appropriate Module User Manual for installation information.
- ✤ Address the racks correctly
  - Each rack has a blue switch on the backplane that selects from 0 to 15.
  - For addressing from 16 to 31 a jumper is placed on the backplane which allows the upper address selection (refer to section 2.3.2).



- ✤ Configure the MP4000 software
  - Insert the racks in the ICM menus.

#### <u>Adding Racks –</u>

In systems that have more than one rack, the racks are added by highlighting Rack 0 and left click to select it. Then right click to bring the up the submenu.

Select Insert Rack then right click.

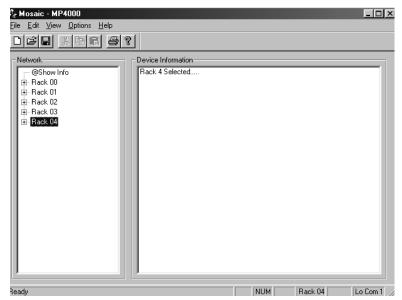
**Note**: It will only add a rack after the last rack on the list.

	8		
Network	Cevice Information     Rack 0 Selected.		

#### <u> Expanded Display –</u>

NOTE: When looking at the system configuration in the network pane, it will show all the slots by default.

If you want to condense the information, position the cursor next to the rack minus sign, left click and it will show only the racks for the system without the individual slots.



#### **Deleting Racks -**

To delete a rack, highlight and left click on the rack to remove and right click. The sub-menu appears, highlight and left click on Delete Rack.

The rack is removed from the list.

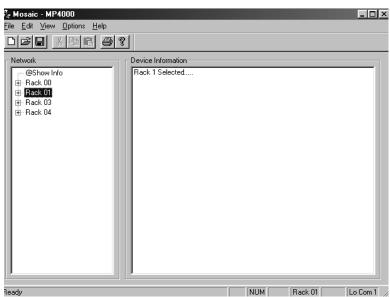
ar Mosaic - MP4000		_ 🗆 ×
<u>File E</u> dit <u>V</u> iew <u>O</u> ptions <u>H</u> elp		
Network     Period       Pack 00     Rack 2 Selected       Rack 01     Rack 11       Rack 02     Rack 01       Rack 03     Rack 01       Rack 04     Rack 01       Rack 05     Rack 01		
Delete Rack from network.	NUM Rack 02	Lo Com 1 🅢

After the rack has been deleted, the information in the screen will show the remaining racks.

It does not renumber the racks. This is due to the physical addressing on the backplane that is required.

Note: It will not allow RACK 0 to be deleted.

Once the devices and racks are configured, the next step is to define the system parameters.



# 5.5 Cue Editing

To start defining the show parameters left click twice on the ICM in Rack 0. The ICM edit menu appears. There are four option tabs on this menu which are described in this section:

- ICM Cue Edit
- ICM Port Configuration
- ICM Animation Configuration
- ICM Online

### 5.5.1 Cue Edit Menu

Define the Cues from this menu. The buttons in the Cue Management pane allow basic editing functions of the cue that is highlighted in the Cue List pane.

To edit a cue, position the highlight on the appropriate cue. Next, either double leftclick the mouse or press the Edit Cue button and the Cue Edit window will be displayed.

ICM Edit Optio	ns: Back A	n					×
				a a tama	1		<u></u>
		ntiguration   1	CM Animation Cor	itiguration   TCM		,	1
Cue Manage			Cue Controls		HMT Enable		
Edit Cue	Copy Q	Syntax ?			nitech Sy		nc.
Search	Paste Q		Outputs	Play > H	Media P MT Monito		led
Edit Alii	Delete Q		Vars	<< Reset			
Cue List							
Cue Alia	\$		Comments				
0							
2							
<u> </u>							
5							
<u>6</u> 7							-
8							
<u> </u>							
							ъČЦ
·							
				OK	Cancel	A	pply
							177-07
			-				
Cue Comment	): Edit Cue	Number: (					
- Cue Comment-			Mode-Valu			Auto	
			Mode-Valu Play: None Stor: Stead	ie e 🔽 🗖		-Auto	
- Cue Comment-			Mode-Valu Play: None Stop: Stead Stead	le e V dy High		-Auto Reset	
- Cue Comment - Watch Dog for			Mode-Valu Play: None Stop: Stear Base Rst: Risin Falin	e dy High A g High A g High		Auto	
Cue Comment			Node-Valu Play: None Stop: Stead Rst: Risin Fallin SoutChan	le ay High ▲ dy Low g High g Low ging ▼ Rate		Auto Reset Start	- [ <b>D</b>   ×
Cue Comment – Watch Dog for Cue Alias WatchDog			Mode-Valu Play: None Stop: Stear Base Rst: Risin Falin	le ay High ▲ dy Low g High g Low ging ▼ Rate		-Auto Reset	
Cue Comment - Watch Dog for Cue Alias WatchDog Cue Editor	PLC to Moni	tor	Mode-Value Play: None Stop: Stear Stear Rst: Ristin Fallin Sou Chan	le a ▼   dy High ▲ g High ▲ g Ligh ↓ g Low ↓ Rate L ▼ 30.0	0 FPS 💌	Auto Reset Start Cancel Import	OK Export
Cue Comment – Watch Dog for Cue Alias WatchDog	PLC to Moni	tor	Mode-Value Play: None Stop: Stear Stear Bst: Fallin SourChan INTERNA	le ay High ▲ dy Low g High g Low ging ▼ Rate	0 FPS 💌	Auto Reset Start Cancel Import	- [ <b>D</b>   ×
Cue Comment Watch Dog for Cue Alias WatchDog Cue Editor Pre Processor Compile Comple	PLC to Moni Complete: 8 L ete: 8 Lines C	tor	Mode-Value Play: None Stop: Stear Stear Bst: Fallin SourChan INTERNA	le a ▼   dy High ▲ g High ↓ g Low ↓ glow ↓ glow ↓ automatic the second	0 FPS 💌	Auto Reset Start Cancel Import	OK Export
Cue Comment Watch Dog for Cue Alias WatchDog Cue Editor Pre Processor I Compile Comple	PLC to Moni Complete: 8 L ete: 8 Lines C r PLC to Mon	tor	Mode-Value Play: None Stop: Stear Stear Rst: Fallin SourChan INTERNA sed, 0 Errors	le a ▼   dy High ▲ g High ↓ g Low ↓ glow ↓ glow ↓ automatic the second	0 FPS 💌	Auto Reset Start Cancel Import	OK Export
Cue Comment Watch Dog for Cue Alias WatchDog Cue Editor Pre Processor Compile Comple	PLC to Moni Complete: 8 L ete: 8 Lines C r PLC to Mon	tor	Mode-Value Play: None Stop: Stear Stear Rst: Fallin SourChan INTERNA sed, 0 Errors	le a ▼   dy High ▲ g High ↓ g Low ↓ glow ↓ glow ↓ automatic the second	0 FPS 💌	Auto Reset Start Cancel Import	OK Export
Cue Comment Watch Dog for Cue Alias WatchDog Cue Editor Pre Processor Compile Comple ; Uop:Set Watch Delay 15; Set WatchDog	PLC to Moni Complete: 8 L ete: 8 Lines C r PLC to Mon chDog' to 1;	tor	Mode-Value Play: None Stop: Stear Stear Stear Stear Stear Fallin Sou Chan INTERNA sed, 0 Errors Frors	le a ▼   dy High ▲ g High ↓ g Low ↓ glow ↓ glow ↓ automatic the second	0 FPS 💌	Auto Reset Start Cancel Import	OK Export
Cue Comment Watch Dog for Cue Alias WatchDog Cue Editor Pre Processor I Compile Comple ; ; Loop:Set Watc Delay 15;	PLC to Moni Complete: 8 L ete: 8 Lines 0 r PLC to Mon shDog' to 1; g' to 0; Turn I	tor	Mode-Value Play: None Stear Stear Stear Stear Fallin Fallin INTERNA sed, 0 Errors Frors	le a ▼   dy High ▲ g High ↓ g Low ↓ glow ↓ glow ↓ automatic the second	0 FPS 💌	Auto Reset Start Cancel Import	OK Export
Cue Comment Watch Dog for Cue Alias WatchDog Cue Editor Pre Processor Compile Comple Watch Dog for Loop:Set Watch Delay 15; Set WatchDog Delay 14;	PLC to Moni Complete: 8 L ete: 8 Lines 0 r PLC to Mon shDog' to 1; g' to 0; Turn I	tor	Mode-Value Play: None Stear Stear Stear Stear Fallin Fallin INTERNA sed, 0 Errors Frors	le a ▼   dy High ▲ g High ↓ g Low ↓ glow ↓ glow ↓ automatic the second	0 FPS 💌	Auto Reset Start Cancel Import	OK Export
Cue Comment Watch Dog for Cue Alias WatchDog Cue Editor Pre Processor Compile Comple Watch Dog for Loop:Set Watch Delay 15; Set WatchDog Delay 14;	PLC to Moni Complete: 8 L ete: 8 Lines 0 r PLC to Mon shDog' to 1; g' to 0; Turn I	tor	Mode-Value Play: None Stear Stear Stear Stear Fallin Fallin INTERNA sed, 0 Errors Frors	le a ▼   dy High ▲ g High ↓ g Low ↓ glow ↓ glow ↓ automatic the second	0 FPS 💌	Auto Reset Start Cancel Import	OK Export
Cue Comment Watch Dog for Cue Alias WatchDog Cue Editor Pre Processor Compile Comple Watch Dog for Loop:Set Watch Delay 15; Set WatchDog Delay 14;	PLC to Moni Complete: 8 L ete: 8 Lines 0 r PLC to Mon shDog' to 1; g' to 0; Turn I	tor	Mode-Value Play: None Stear Stear Stear Stear Fallin Fallin INTERNA sed, 0 Errors Frors	le a ▼   dy High ▲ g High ↓ g Low ↓ glow ↓ glow ↓ automatic the second	0 FPS 💌	Auto Reset Start Cancel Import	OK Export
Cue Comment Watch Dog for Cue Alias WatchDog Cue Editor Pre Processor Compile Comple Watch Dog for Loop:Set Watch Delay 15; Set WatchDog Delay 14;	PLC to Moni Complete: 8 L ete: 8 Lines 0 r PLC to Mon shDog' to 1; g' to 0; Turn I	tor	Mode-Value Play: None Stear Stear Stear Stear Fallin Fallin INTERNA sed, 0 Errors Frors	le a ▼   dy High ▲ g High ↓ g Low ↓ glow ↓ glow ↓ automatic the second	0 FPS 💌	Auto Reset Start Cancel Import	OK Export

Enter the Cue information –

- ☑ Place a comment in the comment section to describe what is happening in the cue.
- ✓ If desired, give the cue an Alias to be used in the PLC, up to 32 characters. Use underscores for spaces.
- ✓ Type in the Media Pro® Control Language commands for the cue in the Cue Editor pane. Refer to the Media Pro® Control Language Manual, Section 3 for more details.

#### <u>Cue Syntax Help –</u>

When entering the cue information, the Syntax ? button will display the Cue Syntax Help screen.

For convenience, the commands may be highlighted and copied to the cue and then edited for specific parameters and values.

Cue Syntax Help	
; TYPE SINGLE ? FOR INDEX & INSTRUCTIONS ; Examples, type first letters to reach desired statement: ABS [@v,@i,@o]; AND [@v,@i,@o] WITH [k,@v,@i,@o]; DECREASE [@v,@i,@o] BY [k,@v,@i,@o]; DELAY [frames,@v,@i,@o];	•
DISPLAY "string"; DISPLAY "string" ROW k COLUMN k; DIVIDE [@v,@i,@o] BY [k,@v,@i,@o]; GOTO g; IF [@v,@i,@o] != [k,@v,@i,@o] GOTO g;	
F [@v,@i,@o] < [k,@v,@i,@o] GOTO g;  F [@v,@i,@o] <= [k,@v,@i,@o] GOTO g;  F [@v,@i,@o] = [k,@v,@i,@o] GOTO g;	-
Copy Text to Clipboard	

#### Mode-Value –

Cues may be triggered by a variety of methods. The cue may be set to Play, Stop, and Reset by the following trigger values:

- None
- Steady High
- Steady Low
- Rising High
- Falling Low
- Changing

Highlight the appropriate pane in the Mode-Value section, click on the down arrow and a pull-down menu appears. Highlight and click on the desired value.

Each cue may be designated to **Start** automatically. When selected, the cue will run automatically on Power Up.

SICM Rack 0: Edit Cue Number: 0		_ 🗆 ×
Vatch Dog for PLC to Monitor	Mode-Value Play: None ▼ Stop: Steady High ▲	Auto Reset Start
	Rst: Rising High Falling Low	Cancel OK
Cue Alias WatchDog	Soul Changing Rate	Import Export
Cue Editor Pre Processor Complete: 8 Lines Processed, Compile Complete: 8 Lines Compiled, 0 Errors ; ; ; ; ; ; ; ; ; ; ; ; ;	s 1 1	est Line Test Cue
4		<b>•</b>

#### <u>Auto –</u>

Additionally, the cue may be set to **Reset** Automatically when a Stop occurs. The **Stop** must be configured in order for the Auto Reset to work.

To select these automatic functions, place a check mark next to the desired selection in the Auto pane at the top right section of the Cue Edit screen.

#### Source and Rate –

There are two other settings that can be selected on this menu – the Source and the Rate:

- SOURCE The default source is the internal clock. The other option is SMPTE. Click on the scroll bar to bring out the menu, highlight SMPTE and click again.
- RATE The Rate specifies the Internal clock rate at which the cue will be clocked. The choices are:
  - 24FPS
  - 25FPS
  - 29.97FPS
  - 30.00FPS

#### Compiling Cues -

After entering the cue information, click on the **Compile** button and the Media Pro® software will check the cue for errors. The messages are displayed in the **Cue Editor** pane. To the right of the pane is a Line pane that will display the line number of the cue that is being edited.

The cue may be tested by line and also in its entirety. To test the line, place the cursor in the line to test and click on the **Test Line** button.

RICM Rack 0: Edit Cue Number: 0	– Mode-Value –		- Auto	<u>-     ×</u>
Watch Dog for PLC to Monitor	Play: None		Resel	
			🗖 Start	
	Stop: None		1	
<b>Y</b>	Rst: None		Cancel	ок
Cue Alias	Source	Rate		
WatchDog	INTERNAL	▼ 30.00 FPS ▼	Import	Export
Cue Editor				
Pre Processor Complete: 8 Lines Processer		Line: Compile	Test Line T	est Cue
Compile Complete: 8 Lines Compiled, 0 Erro	ns.			
Watch Dog for PLC to Monitor				<b>A</b>
; Loop:Set 'WatchDog' to 1; Turn ON Watch	hDog Signal			
Delay 15;				
Set 'WatchDog' to 0; Turn OFF WatchDog Delay 14;	) Signal			
GoTo Loop; Jump back to LOOP and Rep	eat			
i i i i i i i i i i i i i i i i i i i				
Ш				

To test the entire cue, click on the Test Cue button. The cue is sent to the ICM and tested.

#### Copy and Paste Cues –

For cues that are similar and repetitive, they may be written once and then copied. To copy a cue, position the highlight over the cue to be copied. Click on the Copy Q button on the Cue Management pane. It will change to Copy N (where N will be the cue number to be copied).

Then place the highlight over the cue number to paste the cue into that cue number. Then click the Paste Q button in the Cue Management pane.

CM Edit Options: Ra	ck 00		×
ICM Cue Edit   ICM Po	rt Configuration   ICM Animatic	on Configuration   ICM Online	
Cue Management Edit Cue Copy Search Paste Edit Alii Delete	Q Output	s Play> Maited	nable :h Systems Inc. dia Pro 4000 onitor Disabled
Cue List           Cue Alias           0         WatchDog           1            2            3            4            5         Play1		Copy Cue 7 to Cue 3?           No	<u>+</u>
6 7 Play2 8	Play Video	) One	
9 10			▼

A message window appears

confirming the paste. Press the Yes button to perform the paste.

# 5.5.2 Cue Controls

#### <u>Input Channels –</u>

There are 1024 Input Channels for each show. They are used to communicate with the various modules of the system. The information is displayed from 0 - 1023.

Click on the Inputs button in the Cue Controls pane.

Information may be entered by Decimal, Hexadecimal, or Binary formats. Move the slider bar until the channel to be set is shown in the

ICM Edit Optic	ons: Rack OO	)										×
ICM Cue Edit	ICM Port Con	figuratio	n   ICI	M Anin	natio	on Co	onfig	gura	tior	i II	см і	Online
Cue Manag Edit Cue	ement Copy Q	Syntax	21	-Cue In	Con puts	- 1	< !	Stop	1>	1	-	HMT Enable
Search	Paste Q			_	tput	-11	_	lay	_	1	L.	nitech Systems Inc. Media Pro 4000 MT Monitor Disabled
Edit Alii	Delete Q			V	ars		<<	Re	set			
Cue List		Monita	ring I	nput	Cha	anne	els				×	
Cue Alia	tchDog		Dec	Hez	7 (	6 5	4	3	2 1	1 0		
1		0	12	С	0 (		0			0 0		
2		2	0	0	0 0	00	0		0 ( 0 (			
3		3	0	0		0 0			0 0			
4		4	15	F	0 0		0		1			
5		5	0	0	0 (				0 0			
6		6	5	5	0 0		0		1 (			
7		7	0		0 0	00	0		0 0			
8		8	0			0 0					Ţ	
9			•									
10												
1						1						
					_	-						
										OK	_	Cancel Apply

Monitoring Input Channels pane. Type the correct information and press enter.

#### Output Channels –

There are 1024 Output Channels for each show. The information is entered the same as for the input channels. Click on the Outputs button in the Cue Controls pane. The Monitoring Output Channels pane is displayed.

To close either of the Channels pane, click on the X in the upper right corner of the title bar.

CM Cue Edit	ICM Port C	onfiguration	ICM A	۱nima	ition (	Con	figu	ratior	10	CM Online
Cue Manag	ement			ue Co	ontrol	s			. [	HMT Enable
Edit Cue	Copy Q	Syntax ?		Inpu	uts	4	: Sti	op >		Anitech Systems Inc.
Search	Paste Q	[		Outp	uts		Pla	y >	1	Media Pro 4000
Edit Alii	Delete Q	İ		Var	rs		:< R	eset	i	HMT Monitor Disabled
Cue List	M	lonitoring (	Jutpul	Cha	anne	ls			×	
Cue Alia	tchDog	0 Dec	Hez i		<b>5 4</b>			<b>1 0</b> 0 0		tor
1		1 0	0	0 0	0 0	0	0	0 0		
2		2 0 3 0	0	0 0	0 0	0		0 0		
3		<b>3</b> 0 <b>4</b> 0	0		0 0			0 0		
4		<b>5</b> 0		0 0	0 0			0 0		L []
5		6 0 7 0	0		0 0			0 0		L
<u>6</u>		<b>8</b> 0	0		0 0			0 0		II
0		<b>9</b> 0	0	0 0	0 0	0	0	0 0	•	
9	_									•
10										•
1										

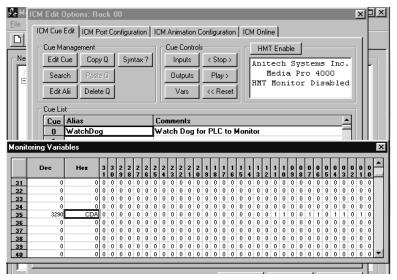
<u>Note</u>: Animation files will always reside in the first 512 Output Channels from 0 - 511. It is recommended that the other modules communicate using the remaining channels from 512 - 1023.

For modules that need 12 bits of information on the channels, use even-numbered channels for the first 8 bits and the consecutive odd-numbered channel for the remaining 4 bits.

#### Configuring Variables -

There are 512 variables available for use by the modules. They are numbered 0 to 511. The information is represented in Decimal, Hexadecimal, and binary formats.

To configure variables, click on the Vars button in the Cue Controls pane. Position the slider bar until the variable to be set is shown in the window and enter the desired value.



Press the X on the right side of the title bar to close the window.

# 5.5.3 ICM Port Configuration

The second tab on the ICM edit options menus is the Port Configuration menu. This menu sets up custom serial connections to the ICM.

#### <u>Port 0</u> –

Click on the scroll arrow to view the selections for the port configuration. Highlight the desired port type and left click.

#### <u>Port 1</u> –

Reserved for maintenance.

#### Ports 2 through 4 -

Click on the scroll arrow to view the protocols for the port configuration. Highlight the desired port type and left click.

<u>Port 5</u> is reserved for future development.

	Port	Туре		Baudra	te	Parit	y		ata its	Ste Bil			Alias	
Port 0	NTSC Exter	nal Syn	1C 🔻	n/a		n/a		n/a	3	n/a				
Port 1	Maintenanc	e Port		19200		None		8		1				
Port 2	Default		-	300	•	None	•	7	•	1	$\bullet$			
Port 3	Default		•	300	•	None	•	7	•	1	•			
Port 4	Default		-	300	•	None	•	7	•	1	•			
Port 5	Default		•	300	•	None	•	7	•	1	•			
	Dta From MP (O)		Data Type		T	PLC Data		) ata MP	а Та (I)		ity ₩)	Data Type	From File	PLC Data
Port 2				File	I									
Port 2 Port 3			Туре	File								Туре		
			Туре	File								Туре ▼		
Port 3			Туре	File								Type •		
Port 3 Port 4 Port 5			Туре	File								Type v v v		

#### Serial Protocols –

Available at time of printing (the list is subject to change without notice). Specific programming details for some of the devices are defined in section 5.7 of this chapter.

Default DF1 Port (PLC/5) Pioneer LD Denon CD Chg Sony CDK 3600 Midi Show Control ETC Lightboard Onicron S Telemetrix Pan/Tilt BJ501 Mixing Brd ASI Win Recorder Sony HDL 2000 Sony 9Pin Proto Peavey Media Mx DF1 Port (SLC500) Max MR-16 Rsvd Rsvd Rsvd Rsvd **DF1** Slave

# 5.5.4 ICM Animation Configuration

Enter the name of the animation file in the highlighted line.

The Browse button will bring up a windows screen to select the

path \ filename from the directory. Press the **Open** button, or double click on the animation file name and it will be placed in the Animation list.

Type in the Alias, as appropriate.

Edit Options: Rack	00			
CM Cue Edit   ICM Port 0	Configuration ICM Anir	mation Configuration	CM Online	
	Animation File	Name	Alias	
@A000				
@A001				
@A002				
@A003				
@A004				
@A005 @A006				
@A007				
@A008				
@A009				
@A010				
@A011				
@A012	Open			?
@A013				
@A014 @A015	🛛 Look in: 合 My Di	ocuments	- È 🖄	r 🖾 🖾
(EA013)		Chu a		
Brows	Icm_4020	Mp4k	z_cub scouts	
	Imc_4020	Pbc_4000	z_pdf files	
	lom_4020	Dem_4020	i z_web files	
	lsm_2020	Tcm_4020	👼 Zip 100 (D)	
	Lcm_4020	🛄 Vmr_4000	lighting1	
	Module_Master	📄 workinprogress		
	•			
	File <u>n</u> ame:			<u>O</u> pen
	Files of type: Anim	ation Data Files (*.ani)	<b>_</b>	Cancel
	<b>D</b> 0	pen as <u>r</u> ead-only		

## 5.5.5 ICM Online

The system needs the cue, configuration, and animation downloaded in order to operate. Every time a change is made to any of these items, they need to be downloaded again. If changes made to a cue do not take affect, try to download the information and then re-run the cue.

To send the information to the ICM, select the ICM Online Menu.

The DL Controls area of the screen has three choices:

#### ✓ Cues Only to Flash –

Downloads *only* the Cue files to Flash.

#### ✓ Cue+Ani To Flash –

Downloads the Cue *and* the Animation file to the Flash.

**NOTE:** The entire Flash is rewritten each time a download is run. Therefore, the previous animation file will be wiped out with a Cues Only download.

#### ✓ Configuration –

Downloads the Configuration

Download Status		DL Controls
Compiling 4 Cues Compiling Cue: 0	<u> </u>	Cues Only To Flash
Compiling Cue: 3		🔿 Cues+Ani To Flash
- Compiling Cue: 5 - Compiling Cue: 7 Checking Download Files		C Configuration
File Download Requires 3 Records ICM Reports 2048 Flash Records Available Checking Files: Downloading 3 Records (1 KB) Requesting ICM Program Mode Erasing 3 Flash Records Downloading Data Records Cues to Flash Download Complete Requesting ICM Run Mode. Run Mode Confirmed!	Y	Compile Only Download Verify
Standby		Abort

information. No Cues or Animation files are affected. Whenever there is a change to any configuration of the modules, it is necessary to send the configuration information to the ICM. When done, the message "Show Config File Build Complete".

#### Compile Only –

Before downloading the information to the ICM, the files need to be compiled. Select COMPILE ONLY button. If there are any errors, it will be displayed in the Download Status window. If no errors are found, the message "Cue File Complete" displays.

#### Download –

Select the correct option by clicking the circle next to it, a dot will be displayed. When ready to download, select the Download button. The information selected to be downloaded will be sent to the ICM. It checks the Flash for record size availability, and states the record size being downloaded. A record is 512 bytes. When completed, it will give a message "Cues to Flash Download Complete".

**<u>NOTE</u>**: The ICM must be switched into Program Mode on the front panel in order to download the files.

#### Verify –

It is strongly recommended to perform a verify after a download. This ensures the download has completed successfully.

### 5.5.6 Saving the Show File

There are two methods of saving the show file, Save and Save As.

#### Save –

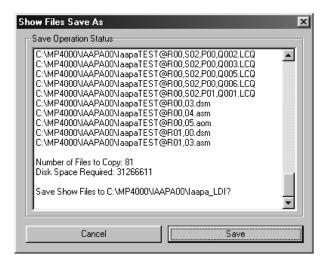
The Show is named when it is first opened. To save all the files for the show, select Save from the File pull-down menu. Clicking on the Disk lcon will save all files also.

#### Save As –

To save all the files under a different show name, select Save As from the File pull-down menu. A message box appears, prompting for the directory and filename:

Save As				?×
Save jn: 🔂	Mp4000	- 1	2 4	
🗋 Example				
📄 Firmware				
🛄 Manual				
Setup				
Mosaic 🖉				
1				
File <u>n</u> ame:	SecondShow			<u>S</u> ave
Save as <u>t</u> ype:	MD4000 Elex (Xislaw)			Cancel
pave as <u>type</u> :	MP4000 Files (*.shw)		<u> </u>	

Enter the information and press the Save button. Another message window appears, showing the path  $\$  filenames of all the files for the show, and the required disk space. To accept the save, press Save button. To abort the save, press Cancel.



# 5.5.7 System Configuration Reports

Once the Media Pro® system has been programmed and set up, a report of the configurations can be printed for reference and future revisions.

To print a report, select PRINT from the FILE options at the top of the menu screen. Place a check mark next to the reports to print. For the Rack and Cue reports type in the number(s) of the reports to print, ie: to print cues 0 through 21 enter the start and end numbers in the boxes next to the Cue report selection.

There are six different reports that may be generated:

#### System Summary –

Prints the Show Configuration Summary. It contains the name of the show and the racks in use. It will print all available racks even those not in use.

#### Alias Table Report –

Prints the Show Alias Summary. It contains all the Alias strings used in the entire show. They are sorted in ascending order by String and by Object.

#### Channel Report –

Prints the Show Channel Report. It contains the Channels that have been assigned for the entire show. The Output channels are printed first and the Input afterward.

#### Animation Report -

Prints a listing of the Animation files used in the show. It contains the Animation file names and their path\filename locations.

#### Configuration Report –

Prints the Rack Configuration Report. It contains a listing of each rack / slot assignments and the configuration of the modules. It specifies the port configuration, channel assignment, and alias.

#### Cues Report -

Prints a report of the Cues used in the show. It contains the Cue Number, Alias, Cue Header, and Cue Text. This report can be very lengthy, so when any changes have been made to cues, just enter the number of those cues changed in the start and end boxes. It will only print the cues that have information in them. It will not print empty or unused cues.

MP4000 Print Setup X **Report Options** Print System Summary Print Alias Table Report Print Channel Report Racks Print Animation Report Start End 10. **[**0] Print Configuration Report Cues Start End 0 0 Print Cues Report ÖK Cancel

# 5.6 Example Usage

If the ICM Port 0 were assigned the Protocol; Pioneer Laser Disk Player and the Alias 'LDP01,' a few commands would be:

- Load 'LDP01' (Spins up the Laser Disk)
- Seek 'LDP01' to 1000 (Seeks a CAV Laser Disk to frame 1000)
- Play 'LDP01' (Plays Laser Disk from Current Frame)
- Set 'LDP01' Audio 0 (Mutes the Players Audio)
- Set 'LDP01' Audio 1 (Enables the Players Audio)
- Set LDP01' Video 0 (Blanks the Players Video)
- Set LDP01' Video 1 (Enables the Players Video)
- Unload 'LDP01' (Parks the Laser Disk)
- Some Protocols also allow strings to be sent to the device.
- Send 'LDP01' "20SPMF\x0d" (Set the speed to 20, multi speed forward).
- Send 'LDP01' "ch3se\x0d" (Seeks a CLV Laser Disk to chapter 3).
- Send 'LDP01' "rjco\x0d" (Reject the Laser Disk, Close the Laser Disk Drawer, Hex value for a Carriage Return Character).

A reason to use the above SEND command instead of the Unload command, is that the Pioneer Laser Disk Players will, when given the REJECT command, park the disk if the disk is playing, or open the Drawer if the disk is not playing. Following the REJECT command with a CLOSE command makes the player close its drawer if the disk was parked when given the REJECT command.

See also Media Pro<sup>®</sup> 4000 User's Operation Manual for more information.

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# 5.7 MPCL Driver Examples

The following examples detail specific programming considerations for devices used with the ICM and SEM modules.

# 5.7.1 Alcorn McBride's Digital Binloop Show Control Driver

This Driver is available in SEM-4020 Firmware SEMdl063.cod and later. This Driver is not available in ICM-4020 Firmware (under development).

Introduction:

The Alcorn McBride Digital Binloop is a multi-'reproducer', multi-segment audio and video player, from source material stored on its removable hard drives and flash drives. It can play from any reproducer on command or in synchronism with received SMPTE. Each rack can also generate SMPTE. One of its several control options is a serial connection using a variant of the Midi Show Control protocol. Technical information for the Digital Binloop can be found at www.alcorn.com.

The MP4000 Midi Show Control driver can be used to control the Binloop on the ICM4020 or SEM4020. The driver converts certain applicable Media Pro Control Language statements into appropriate messages for the Binloop. The useful commands are described here.

We are trying, in the spirit of MSC universality, to keep a single driver that can serve MANY devices, even when connected in a multi-drop scenario. This has made us adopt a two-part specification for device, so we know not only the unit's address on the communications, but also what KIND of device it is, since the Midi Show Control specification permits a wide variety of messaging even for similar devices.

An example of that variety occurs here with the Digital Binloop. Each reproducer has two PCMCIA sockets, and a 'mode' must be selected with the command. The name for the 'mode' directive is 'socket' in the AMI literature, but the values do not directly correspond to the physical PCMCIA sockets.

#### Midi Show Control Driver Translations

The driver translates five MPCL statements, and supports also the 'SEND' statement. There are other Midi Show Control driver statements, but none are applicable to the Digital Binloop.

As mentioned above, the Midi Show Control driver now requires that the device type be provided. This will not affect previously written cues for the WholeHog lightboard or the Horizon DMX controller, since they have been assigned the value 0, which is the default. The 'types' assigned for the

- Digital Binloop are:
  - ➢ 1 AMI Digital Binloop, play unsynchronized
  - 2 AMI Digital Binloop, play synchronized
  - ➢ 3 AMI Digital Binloop, SMPTE generator
  - > PLAY 'db' DEVICE ua-ty TRACK tk-sk SEGMENT sn ;
    - where 'db' is the alias or @Rr,s,p designation of the MSC serial port
      - ua-ty is the hyphenated unit address (1-based) and type
      - tk-sk is the reproducer number (1-based) and socket ('mode')
      - sn is the sound number or video number on the reproducer.
    - generates F0 7F id 02 7F 01 T1 T0 00 SK 00 S2 S1 S0 F7 for type 1
    - or F0 7F id 02 7F 03 T1 T0 00 SK 00 S2 S1 S0 F7 for type 2
      - id is either 7F (if ua is 127) or ua + 8 (since ua is 1-based).
      - T1/T0 is a two ascii-digit sequence giving tk, i.e, if tk is 20, this short string is "20".
      - SK is an ascii-digit giving the value of sk, i.e., 1 -> "1".
      - S2/S1/S0 is a three ascii-digit sequence giving the value of sn;
      - for the Digital Binloop the range is "001" to "511". These are direct translations of sn, no offsets.
    - for values of tk from 50-62, 'groups' of reproducers are played, see the AlcornMcBride manual. If tk is 63, all reproducers play.
- ♦ As for PLAY; generates F0 7F id 02 7F 02 T1 T0 00 SK 00 S2 S1 S0 F7 for type 1 or 2
  > STOP 'db' DEVICE ua-ty TRACK tk-sk SEGMENT sn ;
- Starts the SMPTE generator. Generates F0 7F id 02 7F 15 F7
   PLAY 'db' DEVICE ua-3 ;
- Stops the SMPTE generator. Generates F0 7F id 02 7F 16 F7
   STOP 'db' DEVICE ua-3 ;
- Resets the SMPTE generator. Generates F0 7F id 02 7F 17 F7
   RESET 'db' DEVICE ua-3 ;
- Transmits the character string included within the quotes, verbatim, to the Binloop Autopatch device. This can be used to transmit commands that are not directly supported by the driver.
   > SEND 'db' "anystring\xD";

#### EXAMPLES:

- In our test unit there was a single reproducer installed in the left-most slot, with a single PCMCIA hard disk, containing one sound segment. The controlling SEM was in slot 5 of rack 0, and we used port 0 for it. To play that segment, the Media Pro statement was:
  - > PLAY @R0,5,0 DEVICE 127-1 TRACK 1-1 SEGMENT 1;
    - 127-1 specifies an un-synchronized play to the 'wildcard' device id
    - 1-1 specifies reproducer 1 'socket' 1 (both channels mono or stereo)
    - 1 specifies sound number 1
- The stop command is IDENTICAL except that the verb PLAY is changed to STOP:
   STOP @R0,5,0 DEVICE 127-1 TRACK 1-1 SEGMENT 1;
- To set up for synchronous play, use:
   PLAY @R0,5,0 DEVICE 127-2 TRACK 1-1 SEGMENT 1;
- Note: that the device type has changed to permit the driver to send the synchronized play command rather than the unsychronized play command. For STOP commands, either type 1 or type 2 may be used.
- ✤ The SMPTE code generator statements look like:
  - PLAY @R0,5,0 DEVICE 127-3;
  - > STOP @R0,5,0 DEVICE 127-3 ;
  - RESET @R0,5,0 DEVICE 127-3 ;
- If there are really multiple devices multi-dropped on the MSC output, replacing 127 with the unit ID will provide the correct messaging.

### 5.7.2 Denon CD Protocol Driver

The Denon CD driver is selectable from the Configuration dialogs in the MP4000 software under the ICM4020 and SEM4020. The driver provides translation for a selected subset of the MPCL cue statements into the message set for the Denon player. The driver was written for and tested on the Denon DN-961FA and DN-951FA CD players.

#### **MPCL Cue Statements**

- Note: 'DenonCD' is an alias for a rack/slot/port for which the Denon CD driver has been selected:
  - ➢ STOP 'DenonCD' ;
    - transmits 'W', causes player to stop
  - ➢ SEEK 'DenonCD' TRACK t ;
    - transmits 'QT', where T is a BCD packing of the specified track t; the player ques up at track t.
  - ➢ SEEK 'DenonCD' TO f ;
    - transmits 'TMSF', where M, S, and F are BCD packings of the specified minutes, seconds, and frames. Note that the frame's value is calculated base on the assumption that f in the statement has been entered as 00:mm:ss.ff, where ff is the desired frame at a 30 f/s rate (i.e., ff is 0 to 29). In the absence of a preceding SET FRAME command (see next paragraph), then, the frame number from the cue statement is multiplied by 2.5 to achieve the 75 f/s operation used by the Denon player. Thus, the actual frame numbers transmitted to the player will be 0, 2, 5, 7, 10, 12, 15, 17, 20, 22, 25, 27, 30, 32, 35, 37, 40, 42, 45, 47, 50, 52, 55, 57, 60, 62, 65, 67, 70, and 72.
  - ➢ SET 'DenonCD' FRAME f;
    - In the event that the user requires specification of frames not reachable by this 'multiply by 2.5' operation, described above, a SET FRAME command can be used to recover the full precision of the player. The SET FRAME command should immediately precede the SEEK TO command in the cue, with a frame number f from 0 to 74. With this 'notification', the SEEK TO command described above will use this value for the frames value transmitted to the Denon player.
  - PLAY 'DenonCD' ;
    - transmits 'P' to player, causes the player to play from the currently cued position.
  - SEND 'DenonCD' "anystring" ;
    - transmits 'anystring' to player. This command permits the user to send arbitrary messages to the player, to cover any aspects of control not supported directly in the driver.

DB9S on player	DB9P on cable
pin 1,6	ground
pin 2	TXD-
pin 3	RXD+
pin 4,5	n/c
pin 7	TXD+
pin 8	RXD-
pin 9	n/c

#### DENON PLAYER CABLE CONNECTION: Denon DN951-FA

# 5.7.3 MIDI Show Control Implementation

THE MEDIA PRO 4000 CUES for the Whole Hog lightboard. Media Pro® 4000 Cue Statements in MIDI Show Control and What The Whole Hog Does...

- Notes: All q# should be entered as 10 times their value. The MSC driver will insert a decimal point, i.e., q# of 100 will appear in messages as 10.0, etc. Although q# (and p# and l#) are stored as integers, they are delivered in the messages as ascii numbers.
- ✤ All of the messages shown below are preceded by a common 'Sysex' header F0 7F d# 02 01, where the d# is the device number d# from the cue statement, 02 is the MSC token, and 01 is the command type. Further, each message is terminated with F7.
  - > STOP msc DEVICE d
    - 02 00
    - cuelist on 'selected' master stops
  - STOP msc DEVICE d# CUE q#
    - 02 00 q#
    - cuelist on 'selected' master stops (cue # ignored)
  - ➢ STOP msc DEVICE d# LIST I#
    - 02 00 1#
    - specified cuelist stops
  - PLAY msc DEVICE d#
    - 01 00
    - press go
  - PLAY msc DEVICE d# CUE q#
    - 01 q#
    - goto cue
  - > PLAY msc DEVICE d# LIST l#
    - 01 q# 00 l#
    - goto cue in cuelist
  - RESUME msc DEVICE d#
    - 03 00
    - resume cuelist
  - RESUME msc DEVICE d# CUE q#
    - 03 q#
    - resume cuelist (cue ignored) on 'selected' master
  - RESUME msc DEVICE d# LIST l#
    - 03 00 l#
    - resume cuelist
  - ➢ STEP msc DEVICE d#
  - (Standbye\_+)
  - step up (cuelist on 'selected' master)
  - > STEP msc DEVICE d# REVERSE
  - (Standbye\_-)
  - step down (cuelist on 'selected' master)

- ➢ STEP msc DEVICE d# LIST I#
- 11 l#
- step up cuelist
- > STEP msc DEVICE d# LIST l# REVERSE
- 1#
- step down cuelist
- RESET msc DEVICE d#
- 0A
- ignored (use Open Cue Path)
- LOAD msc DEVICE d# LIST l#
- 1B l# (Open Cue List)
- activate cuelist
- ➢ LOAD msc DEVICE d# PATH p#
- 1D p# (Open Cue Path)
- change page
- SET msc DEVICE d# MASTER val
- 06 FE 01 val (val is 14 bits in two characters, ls/ms)
- grand master move
- SET msc DEVICE d# RATE val
- 06 FF 01 val (val is 14 bits in two characters, ls/ms)
- rate thruster move
- SET msc DEVICE d# FADER f# val
- 06 f# 00 val (val is 14 bits in two characters, ls/ms)
- fader move

# 5.7.4 MPCL Driver for MR-16 AUDIO MATRIX

This summary assumes that the user is familiar with the MR16, its control messaging, and the methods for creating and applying patches and groups within the unit. Note that not ALL features of the MR16 are accessible with MPCL statements.

## ✤ PARAMETER VALUE RANGES

(Note that even though the protocol for the unit is 0-based, the driver permits the cue statements to be 1-based ranges for the patch, group, input, and output number, thus making them agree with reports on the MR-16 display. The driver, however, will not change references in SEND commands, which must still be 0-based to align with the unit's protocol.)

patch	{ 1 to 32 }
group	{ 33 to 64 }
ii	{ 1 to 16 }
00	{ 1 to 16 }
preset	{ 1 to 75 }
-	(10) 055)

- tt { 10 to 255 }
- b { 0 to 1 }
- vl { 0 to 100, percentage, with LEVEL token )
- vd { -420 to 60, absolute decibels in tenths, with DBLEVEL token; range 0 to 60 denote +db, but don't type + in cue.}
- CREATE PATCHES connect input ii to output oo with level vl/vd.
  - SET @Rr,s,p PATCH patch CHANNEL ii-oo LEVEL vl; [02 patch ii-oo vl FF]
  - SET @Rr,s,p PATCH patch CHANNEL ii-oo DBLEVEL vd ; [02 patch ii-oo vl FF]
- SET, RAMP LEVELS works only on predefined patches and groups. (please see MR16 manual about operation of gain changes on groups)
  - SET @Rr,s,p DEVICE patch/group LEVEL vl; [00 patch/group vl FF]
  - SET @Rr,s,p DEVICE patch/group DBLEVEL vd ; [00 patch/group vl FF]
  - RAMP @Rr,s,p DEVICE patch/group LEVEL vl IN tt; [1A patch/group vd FF]
  - RAMP @Rr,s,p DEVICE patch/group DBLEVEL vd IN tt ;[1A patch/group vd FF]

*	MUTE/UNMUTE - b=1 for UNMUTE, b=0 for MUTE.	
	SET @Rr,s,p DEVICE patch/group AUDIO b ;	[0F patch/group (1-b) FF)
*	INPUT GAIN - professional vs. consumer. (use ii=16 for globa SEM4020 discriminates only neg/non-neg arguments)	l set of all inputs, note that
	SET @Rr,s,p INPUT ii DBLEVEL {-10,4};	[08 ((+ OR -)01 or 00) FF]
*	PRESETS - internally stored setup configurations.	
	LOAD @Rr,s,p WITH preset ;	[0C preset FF]
	RECORD @Rr,s,p TO preset ;	[0B preset FF]

- LOCK FRONT PANEL note that this command will be retired soon. (unit cannot be unlocked with any command)
  - SETLOCK @Rr,s,p ON ;

[OE FF]

- GROUP LOAD adds single patch to group, UNLOAD removes single patch.
  - LOAD @Rr,s,p LIST group PATCH patch ; [04 group patch FF]
     UNLOAD @Rr,s,p LIST group PATCH patch ; [05 group patch FF]
- ✤ DELETE PATCH OR GROUP, CLEAR THE MATRIX
  - RESET @Rr,s,p DEVICE patch/group ;
  - RESET @Rr,s,p;

[(03 patch) or (0D group) FF] [01 FF]

- Level value translation from MPCL cue statements: (Partial table; firmware has complete tables)
  - **ABSOLUTE(db)** LINEAR(hex) LINEAR(%) 0xF1 + 6db100 0xFF 50 0xD3 + 0db0x80 25 0xB5 - 6db0x40 0x97 -12db 0x20 12 0x79 -18db 0x10 6 3 0x5B -24db 0x08 2 0x3D -30db 0x04 0x02 1 0x1F -36db 0x01 -42db 0x01 1 0x00 -inf 0 0x00 (off)
  - LINEAR vs ABSOLUTE(db)

- Notes about button operation with messaging from the SEM or ICM:
  - The [SELECT]/[DOWN] manual lock operation only works if the panel is showing the PRESET MENU. In other menus the [DOWN] button is operative.
  - When the panel is locked with a serial LOCK FRONT PANEL command, the command does not take effect until the PRESET MENU is reached with [MODE]. If the panel is on another menu when the command is received, the field(s) on that menu can still be changed. If the panel IS on the PRESET MENU when the command is received, the 'VER 5.89 PRESET->01' line is not deleted until a front panel button is pressed.
  - Operation of front panel buttons affects the way the unit responds to messages from the RS232 port. When the panel is NOT locked, pressing buttons can delay the response from the unit. When the front panel IS locked, pressing the [UP], [DOWN], or [SELECT] buttons will cause the unit to not answer a 'RETURN' message for about two seconds; pressing the [MODE] button will cause the unit to stop answering these messages forever (pressing one of the other buttons will recover to the two-second delay, after which answers resume). It appears that only responses are affected -- a command sent during the two-second period, or during the forever period, is executed.

- There is evidently an interaction between the 10/s polling and the manual exit from the locked condition. This has not been fully investigated, but noticed so far is that pressing the button sequence too quickly will result in failure, i.e., the panel remains locked.
- > The effect of changes to the unit's configuration and setup are not always immediately posted to menus on the screen. To verify, change menus and return to the menu of interest.

## 5.7.5 Pioneer LDP Protocol Driver

Media Pro Control Language Statements SEM and ICM driver for PIONEER LDP V4400 <u>Note:</u> This summary assumes that the user is familiar with the Pioneer Laser Disk Player, and its control messaging. Note that not ALL features of the Pioneer LDP V4400 are accessible with MPCL statements. The form of the output from the driver is given in brackets, e.g.: The initialization string is [FRPA]. All commands are terminated with <CR>, so this is not listed.

#### ✤ <u>PARAMETER VALUE RANGES</u>

- frame <-- { 0 or 00:00:00.00 to 65535 or about 00:36:00:00 }</pre>
- $\blacktriangleright$  b <-- { 0 to 1 }
- ➤ ar <-- ( audio register, modified by driver for command )</p>

*	MOTION CONTROL & POSITION	
	STOP @Rr,s,p ;	[ST]
	STOP @Rr,s,p AT frame ;	[frameSM]
	SEEK @Rr,s,p TO frame ;	[frameSE]
	PLAY @Rr,s,p;	[PL]
	PLAY @Rr,s,p FROM frame ;	[frameSEPL]
	PLAY @Rr,s,p TO frame	[frameSMPL]
	PLAY @Rr,s,p FROM frame TO frame ;	[frameSMframeSEPL]
	STEP @Rr,s,p ;	[SF]
	STEP @Rr,s,p REVERSE ;	[SR]

- ◆ <u>CLOSE DRAWER, SPIN UP, SPIN DOWN, EJECT</u>
   > UNLOAD @Rr,s,p; [RJ]
- Note that the UNLOAD command will cause spin down if the unit is currently playing, or will cause eject if unit already spun down.
  - LOAD @Rr,s,p;
  - Closes the drawer if open, otherwise cause spin up.

*	MISCELLANEOUS CONTROL	
	SET @Rr,s,p AUDIO b ;	[arAD]
	SET @Rr,s,p AUDIO_BOTH b ;	[arAD]
	SET @Rr,s,p AUDIO_LEFT b ;	[arAD]
	SET @Rr,s,p AUDIO_RIGHT b ;	[arAD]
	SET @Rr,s,p VIDEO b ;	[bVD]
	SET @Rr,s,p DISPLAY b ;	[bDS]
	SEND @Rr,s,p "string";	[string]

✤ The "string" is translated so that embedded hex-character specifiers are appropriately translated, e.g., "Send 14h to the unit: \x14"; The syntax pulldown in MP4000 describes more SEND features.

[SA]

# 5.7.6 Pioneer LDP Driver with Alcorn McBride's DVM2

This Driver is available in SEM-4020 Firmware SEMdl063.cod and later. This Driver is not available in ICM-4020 Firmware (under development).

### Introduction:

The Alcorn McBride DVM2 (Digital Video Machine 2)(tm) is an MPEG2 (et al) video player, from source material stored on its removable hard drive. One of its several control options is a serial connection using a variant of the protocol used for the Pioneer Laser Disk players. Technical information for the DVM2 can be found at www.alcorn.com.

The MP4000 Pioneer LDP driver can be used to control the DVM2 on the ICM4020 or SEM4020. The driver converts certain applicable Media Pro Control Language statements into appropriate messages for the DVM2. The useful commands are described here. The DVM2 has the minor limitation, unlike an LDP, that it cannot accept compound commands.

#### Pioneer LDP Driver Translations:

- The driver translates five MPCL statements, and supports also the 'SEND' statement. MPCL statements that generate compound commands (i.e., PLAY FROM) are not listed.
- ❖ Transmits "fnSE<CR>", causing the dvm2 to seek to (prepare to play) file number fn. See the DVM2 manual for particulars.
   ➢ SEEK 'dvm2' TO fn ;
- Transmits "PL<CR>", causing the dvm2 to play the previously 'SEEKed' video file.
   PLAY 'dvm2';
- Turns the screen to black (0) or video (1) without stopping playback.
   SET 'dvm2' VIDEO 0/1 ;
- Not usable; generates 4AD and 7AD for the Pioneer audio register.
   > SET 'dvm2' AUDIO 0/1 ;
- Stops playback; uses the ST (still) command so video is not turned off.
   STOP 'dvm2';
- ❖ Transmits the character string included within the quotes, verbatim, to the DVM2 device. This can be used to transmit commands that are not directly supported by the driver.
   ➢ SEND 'dvm2' "anystring\xD";
- This can be used to send a loop command to the player, for example:
   > SEND 'dvm2' "LP\xD" ;

# 5.7.7 Send Statements Used in Cues to RS232 Ports.

- Send Statements
  - Send 'Alias' "string";
    - Sends the text in-between the "quotes" to the serial port that is assigned the alias 'Alias'.
    - The @rRack,Slot,Port object can also be used.
  - Send @r0,17,2 "string";
  - Send 'Alias' "Carriage Return\x0D";
    - ASCII codes can be put in the string using a \ or \x, followed by the ASCII character in Hexadecimal.
    - Carriage Return is \x0D, Line Feed is \x0A

ASCII Chart							
HEX	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII
00	NUL	01	SOH	02	STX	03	ETX
04	EOT	05	ENQ	06	ACK	07	BEL
08	BS	09	HT	0A	LF	0B	VT
0C	FF	0D	CR	0E	SO	0F	SI
10	DLE	11	DC1	12	DC2	13	DC3
14	DC4	15	NAK	16	SYN	17	ETB
18	CAN	19	EM	1A	SUB	1B	ESC
1C	FS	1D	GS	1E	RS	1F	US
20	space	21	!	22	"	23	#
24	\$	25	%	26	&	27	'
28	(	29	)	2A	*	2B	+
2C	,	2D	-	2E		2F	/
30	0	31	1	32	2	33	3
34	4	35	5	36	6	37	7
38	8	39	9	3A	:	3B	;
3C	<	3D	=	3E	>	3F	?
40	@	41	А	42	В	43	С
44	D	45	E	46	F	47	G
48	Н	49	Ι	4A	J	4B	K
4C	L	4D	М	4E	N	4F	0
50	Р	51	Q	52	R	53	S
54	Т	55	U	56	V	57	W
58	Х	59	Y	5A	Z	5B	[
5C	/	5D	]	5E	٨	5F	_
60	`	61	a	62	b	63	с
64	d	65	e	66	f	67	g
68	h	69	i	6A	j	6B	k
6C	1	6D	m	6E	n	6F	0
70	р	71	q	72	r	73	S
74	t	75	u	76	v	77	W
78	Х	79	у	7A	Z	7B	{
7C		7D	}	7E	~	7F	DEL

**ASCII Chart** 

- > Variables can be put in the send string.
  - Variables use %d###.bb, %d###, %D###, %t###, %T###.
    - Where ### is the Variable Number (0-511)
    - Where d & D stand for Decimal Format
      - d & D are equivalent
      - d & D will send the valueless than 65535 in decimal format.
    - Where t & T stand for Timecode Format
      - t & T are equivalent
      - t & T will send the value in Time Code Format hh:mm:ss.ff, for values less than 24:00:00.00.
    - Where bb is a specific bit (0-31) of the Variable
    - Example Send 'Alias' "%H123"; would display Variable Number 123's value in Hexadecimal.
    - Example Send 'Alias' "%D123.31"; would display Variable Number 123, bit 31's value as 0 or 1.

# 5.7.8 SONY9PIN Protocol

MEDIA PRO 4000 STATEMENTS FOR SONY9PIN PROTOCOL

#### Parameter types:

b = boolean f = frame number t = time in hh:mm:ss.ff \x = defines hex value \xCS = byte, checksum \b = defines bcd value \bHH = byte, BCD hours \bMM = byte, BCD minutes \bSS = byte, BCD seconds \bFF = byte, BCD frames

- (does not transmit any message to device) Prevents/Enables the driver from polling the attached device.
  - SET 'Sony9pDevice' POLL b ;
- $\$  \x24 \x31 \bHH \bMM \bSS \bFF \xCS
  - SEEK 'Sony9pDevice' TO [f,t] ;
    - Attached device moves to time specified; see below for caveats.
- ✤ \x20 \x00 \xCS
  - STOP 'Sony9pDevice' ;
    - Attached device stops.
- - PLAY 'Sony9pDevice' ;
    - Attached device plays.
- $\textbf{ (x20 } x02 \\ xCS$ 
  - RECORD 'Sony9pDevice' ;
    - Attached device records.
- (x20)x0FxCS
  - UNLOAD 'Sony9pDevice' ;
    - device executes eject ;
- ✤ \x20 \x20 \xCS
  - RESET 'Sony9pDevice' ;
    - Attached device executes rewind ;
  - SEND 'Sony9pDevice' "ArbitraryString" ;
    - Transmits the specified string to the attached device.

#### CONSIDERATIONS ABOUT SEEK COMMANDS:

When the MP4000 compiler operates on a statement like:

SEEK 'DR8' TO 00:01:15.00;

The hours/minutes/seconds/frames format is converted to an absolute frame number for download into the ICM. This conversion is based on the assigned rate for the cue, selected in the 'Rate' drop down window, one of 24, 25, 29.97, or 30 fps.

For example, the above specification would be:

at 24 fps: 1800 frames, at 25 fps: 1875 frames, at 30 fps: 2250 frames.

In the Sony 9-pin and HiDef protocols, the frame numbers delivered in the cue download must be converted back into an hhmmssff format. The conversion rate is not delivered to the driver, so it makes the reverse conversion based on 30 frames per second. If the cue in which the SEEK statement appeared was at some other rate, the reverse conversion will be erroneous; the 1875 frame item would be 00:01:02.15.

Therefore, when writing SEEK statements for the Sony 9-pin protocol:

- a) put the SEEK statement in a cue running at 30fps, OR
- b) don't use the hh:mm:ss.ff form -- calculate and insert the single number frame specification required by the driver for your machine.

Note that the conversion from hh:mm:ss.ff is done at compile time, not at run time. Therefore, if you use any SET RATE commands on your cue, or lock to SMPTE, the frame values calculated from the Rate in the Cue Edit window will not change.

One possible workaround is to use another cue to issue the SEEK command to the Sony 9-pin port.

#### CONSIDERATIONS WHEN USING AKAI DR8/DR16

We have noted two conditions that can confuse the DR8 under the IB-805R interface card. These were reported to Akai but we don't know if they have fixed the problems.

- a) if a break is received on the RS422 line (a break character, or even disconnection and reconnection of the transmitting equipment in some cases), the DR8 ceases to communicate. The only recovery is to cycle the power. Note that if the baud rate is set too low on the transmitting equipment, or too high on the DR8, that 'normal' characters can be interpreted as breaks.
- b) if a 'garbage' character is received between messages, it can make the DR8 reject the subsequent correct message, or even additional messages.

# 5.8 Cue Access to Status

This section describes the Load Status Statement for use in the cues. The new form of Load Status uses the 'From' qualifier to establish persistent status. This capability is available with the more recent versions of software and firmware as listed:

- MP4000 Software version 1.9.1.8 or newer
- ▶ ICM firmware revisions from 3220119U.COD and later

For additional information on the usage, timing, and programming considerations refer to the <u>MP4000 Operation and Programming Manual</u>. The Indices (n) Status-of-Interest that are available at the time of writing have been detailed further in this section. Additionally, briefs with updates to the product are published on the website – (http://www.Anitech-Systems.com).

## CUE STATEMENT ACCESS TO STATUS

The following statements are used to get status information:

LOAD [@Vv,@li,@Oo] WITH @Rr,s[,p] STATUS n BYTE b-e ;

LOAD [@Vv,@li,@Oo] FROM @Rr,s[,p] STATUS n BYTE b-e;

where [@Vv,@Ii,@Oo] selects the destination for the status (in the 'syntax' pull-down menu in MP4000, this is [anyv]).

@Rr,s,[,p]	Selects the source of the status
n	Selects the Status-of-Interest
b-e	Gives the beginning and end byte to get
WITH	Establishes a one-time request,
FROM	Establishes a persistent delivery to the target

In the source, if the port [,p] is not given, the status will refer to the module rather than one of its ports.

<u>Note</u> - the generic form works also for cues and animation scenes, with @Qqqq or @Aaaa replacing the (Source) @Rr,s[,p]:

LOAD [@Vv,@li,@Oo] WITH @Qqqq STATUS n BYTE b-e;

LOAD [@Vv,@li,@Oo] FROM @Qqqq STATUS n BYTE b-e;

LOAD [@Vv,@li,@Oo] WITH @Aaaa STATUS n BYTE b-e ;

LOAD [@Vv,@li,@Oo] FROM @Aaaa STATUS n BYTE b-e;

The value n is the 'index' to the status of interest in the set associated with the specified port @Rr,s,p or module @Rr,s. Using 0 for n always retrieves a set of status bits for the source; values 1 and higher are for data specific to the port or module. Some status items carry similar information from all modules and ports.

The BYTE token and b-e specifier are a way to control and/or limit what status is moved. Ordinarily, a BYTE range is used that corresponds exactly with the size of the status:

8-bit status:	BYTE 0-0
16-bit status:	BYTE 0-1
32-bit status:	BYTE 0-3
Arrays of 8-bit:	BYTE b-e

## UNLOAD STATEMENT

The following statement releases the variable, input byte, or output byte for normal use: UNLOAD [@Vv,@Ii,@Oo];

# 5.8.1 STATUS INDICES (n) for ICM-4020 Module and Ports

**<u>CUE STATUS</u>** (used with source **@Qqqq**) Status-of-interest:

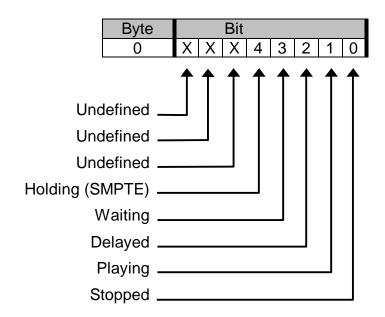
(\* indicates items that are not functional as of date of writing.)

Index (n)	Description	Bytes
0	CUE_BIT_STATUS	0-3 *
1	CUE_STATE	0-0
2	CUE_FRAME	0-3
3	CUE_SYNC_FRAME	0-3
4	CUE_RATE	0-0

Cue Status 0 (Byte 0-3), Cue Bits -

Not implemented at time of writing.

Cue Status 1 (Byte 0-3), CUE STATE -



## Cue Status 2 (Byte 0-3), Cue Frame -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	7	6	5	4	3	2	1	0
2	7	6	5	4	3	2	1	0
3	MSB	6	5	4	3	2	1	0

Programming

# Cue Status 3 (Byte 0-3), Cue Sync Frame -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	7	6	5	4	3	2	1	0
2	7	6	5	4	3	2	1	0
3	MSB	6	5	4	3	2	1	0

Cue Status 4 (Byte 0-0), Cue Rate -

Byte			Bit					
0	7	6	5	4	3	2	1	0

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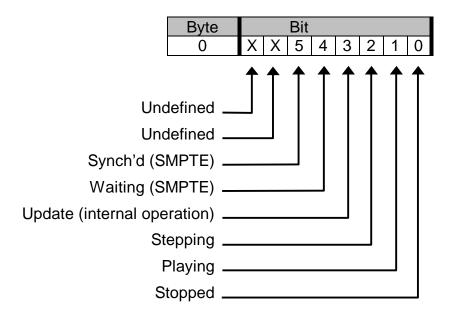
**SCENE STATUS** (used with source **@Aaaa**) Status-of-interest:

Index (n)	Description	Bytes
0	SCENE_BIT_STATUS	0-3 *
1	SCENE_STATE	0-0
2	SCENE_FRAME	0-3
3	SCENE_SYNC_FRAME	0-3
4	SCENE_RATE	0-0
5	SCENE_TCM_ERROR_COUNT	0-1

## Scene Status 0 (Byte 0-3), Scene Bits -

Not implemented at time of writing.

## Scene Status 1 (Byte 0-0), Scene State -



## Scene Status 2 (Byte 0-3), Scene Frame –

Byte		Bit								
0	7	6	5	4	3	2	1	LSB		
1	7	6	5	4	3	2	1	0		
2	7	6	5	4	3	2	1	0		
3	MSB	6	5	4	3	2	1	0		

## Scene Status 3 (Byte 0-3), Scene Sync Frame -

Byte		Bit								
0	7	6	5	4	3	2	1	LSB		
1	7	6	5	4	3	2	1	0		
2	7	6	5	4	3	2	1	0		
3	MSB	6	5	4	3	2	1	0		

Scene Status 4 (Byte 0-0), Scene Rate -

Byte			Bit					
0	MSB	6	5	4	3	2	1	LSB

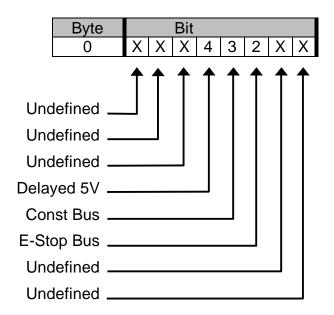
Scene Status 5 (Byte 0-1), Scene TCM Error Count -

Byte		Bit								
0	7	6	5	4	3	2	1	LSB		
1	MSB	6	5	4	3	2	1	0		

ICM MODULE STATUS	(used with Source	<b>@R0,17</b> ) Status-of-Interest:
-------------------	-------------------	-------------------------------------

Index (n)	Description	Bytes
0	ICM_BIT_STATUS	0-3 *
1	BOOT_VERSION	0-3
2	DOWNLOAD_VERSION	0-3
3	FRONT_PANEL_SWITCH	0-0
4	MEMORY_CAPACITY	0-3*
5	RESET_COUNT	0-1*
6	RESTART_COUNT	0-1*
7	NUMBER_OF_CUES	0-1
8	RAM_CUE_COUNT	0-1
9	CUE_ERROR_COUNT	0-1
10	EVENT_ERROR_COUNT	0-1
11	NUMBER_OF_SCENES	0-1
12	NUMBER_OF_OCCUPIED_SLOTS	0-0
13	SLOT_CARD_TYPES (array)	b-e b,e 0-16

ICM Module Status 0 (Byte 0-3), Bit Status -



ICM Module Status 1 (Byte 0-3), Boot Version –

Byte		Bit							
0	7	6	5	4	3	2	1	LSB	
1	7	6	5	4	3	2	1	0	
2	7	6	5	4	3	2	1	0	
3	MSB	6	5	4	3	2	1	0	

Programming

## ICM Module Status 2 (Byte 0-3), Download Version -

Byte		Bit								
0	7	6	5	4	3	2	1	LSB		
1	7	6	5	4	3	2	1	0		
2	7	6	5	4	3	2	1	0		
3	MSB	6	5	4	3	2	1	0		

### ICM Module Status 3 (Byte 0-0), Front Panel Switch –

Byte			Bit					
0	MSB	6	5	4	3	2	1	LSB

### ICM Module Status 4 (Byte 0-3), Memory Capacity –

Not implemented at time of writing.

## ICM Module Status 5 (Byte 0-1), Reset Count –

Not implemented at time of writing.

#### ICM Module Status 6 (Byte 0-1), Restart Count -

Not implemented at time of writing.

### ICM Module Status 7 (Byte 0-1), Number of Cues –

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

## ICM Module Status 8 (Byte 0-1), Ram Cue Count -

Byte		Bit							
0	7	6	5	4	3	2	1	LSB	
1	MSB	6	5	4	3	2	1	0	

#### ICM Module Status 9 (Byte 0-1), Cue Error Count –

Byte		Bit							
0	7	6	5	4	3	2	1	LSB	
1	MSB	6	5	4	3	2	1	0	

## ICM Module Status 10 (Byte 0-1), Event Error Count -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

ICM Module Status 11 (Byte 0-1), Number of Scenes -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

ICM Module Status 12 (Byte 0-1), Number of Occupied Slots –

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

## ICM Module Status 13 (Byte 0-16), Slot Card Type (array) b-e b,e -

Each byte represents a slot in the rack, and the value of the byte represents the module type in that slot.

Byte			Bit					
0	7	6	5	4	3	2	1	0
1	7	6	5	4	3	2	1	0
2	7	6	5	4	3	2	1	0
3	7	6	5	4	3	2	1	0
4	7	6	5	4	3	2	1	0
5	7	6	5	4	3	2	1	0
6	7	6	5	4	3	2	1	0
7	7	6	5	4	3	2	1	0
8	7	6	5	4	3	2	1	0
9	7	6	5	4	3	2	1	0
10	7	6	5	4	3	2	1	0
11	7	6	5	4	3	2	1	0
12	7	6	5	4	3	2	1	0
13	7	6	5	4	3	2	1	0
14	7	6	5	4	3	2	1	0
15	7	6	5	4	3	2	1	0
16	7	6	5	4	3	2	1	0

Below is a table of Module Types that will be found in the Slot Card Type array:

Decimal	Hexadecimal	Module Type
1	(0x01)	IOM-4010/20
2	(0x02)	SEM-4010
3	(0x03)	ASM-4010
4	(0x04)	DSM-4010
5	(0x05)	LCM-4010
6	(0x06)	TCM-4010
7	(0x07)	AOM-4010
8	(0x08)	ABM-4010
9	(0x09)	SEM-4020
10	(0x0A)	ASM-4020
11	(0x0B)	LCM-4020
12	(0x0C)	DSM-4020
13	(0x0D)	TCM-4020
14	(0x0E)	ASM-4030
255	(0xFF)	EMPTY SLOT

Index (n)	Description	Bytes
0	ICM_PORT0_BIT_STATUS	0-3 *
1	FRAME_OF_DAY	0-3
2	YEAR	0-1
3	MONTH	0-0
4	DATE	0-0
5	DAY	0-0
6	HOUR	0-0
7	MINUTE	0-0
8	SECOND	0-0
9	VIDEO_SYNC_COUNT	0-3
10	VIDEO_SYNC_RATE	0-0*
11	SYSTEM_FRAME_COUNT	0-3

**ICM PORT 0 STATUS** (used with Source **@R0,17,0**) Status-of-Interest:

Note that the FRAME\_OF\_DAY may be DISPLAYed with the %T attribute to get a time-ofday output to the HMT, if you don't mind having the running frame number at the end.

The internal clock (hardware or firmware) is SET with statements addressing port 0. A separate brief is available concerning the on-board clock and the beeper.

#### ICM Port 0 Status 0 (Byte 0-3), Bit Status -

Not implemented at time of writing.

## ICM Port 0 Status 1 (Byte 0-3), Frame of Day –

Byte		Bit									
0	7	6	5	4	3	2	1	LSB			
1	7	6	5	4	3	2	1	0			
2	7	6	5	4	3	2	1	0			
3	MSB	6	5	4	3	2	1	0			

#### ICM Port 0 Status 2 (Byte 0-1), Year -

	Byte		Bit								
ĺ	0	7	6	5	4	3	2	1	LSB		
ĺ	1	MSB	6	5	4	3	2	1	0		

ICM Port 0 Status 3 (Byte 0-0), Month -

Byte			Bit					
0	MSB	6	5	4	3	2	1	LSB

#### ICM Port 0 Status 4 (Byte 0-0), Date -

Byte			Bit					
0	MSB	6	5	4	ვ	2	1	LSB

ICM Port 0 Status 5 (Byte 0-0), Day -

Byte			Bit					
0	MSB	6	5	4	3	2	1	LSB

ICM Port 0 Status 6 (Byte 0-0), Hour -

Byte			Bit					
0	MSB	6	5	4	3	2	1	LSB

ICM Port 0 Status 7 (Byte 0-0), Minute -

Byte			Bit					
0	MSB	6	5	4	3	2	1	LSB

ICM Port 0 Status 8 (Byte 0-0), Second -

Byte			Bit					
0	MSB	6	5	4	3	2	1	LSB

ICM Port 0 Status 9 (Byte 0-3), Video Sync Count -

Byte		Bit								
0	7	6	5	4	3	2	1	LSB		
1	7	6	5	4	3	2	1	0		
2	7	6	5	4	3	2	1	0		
3	MSB	6	5	4	3	2	1	0		

ICM Port 0 Status 10 (Byte 0-0), Video Sync Rate -

Not implemented at time of writing.

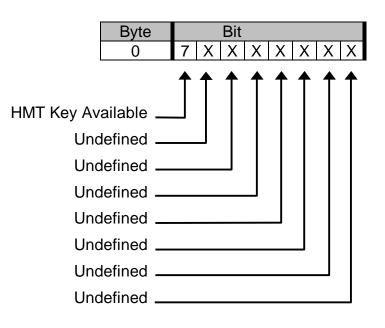
## ICM Port 0 Status 11 (Byte 0-3), System Frame Count -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	7	6	5	4	3	2	1	0
2	7	6	5	4	3	2	1	0
3	MSB	6	5	4	3	2	1	0

**ICM PORT 1 STATUS** (used with Source **@R0,17,1**) Status-of-Interest:

Index (n)	Description	Bytes
0	ICM_PORT1_BIT_STATUS	0-3
	Bit 7 of this status indicates that an HMT key is available to load (see status index 11); this bit is cleared when the load	
	of status index 11 is done.	
1	NET_ONLINE_BITS	0-3
2	UPDATE_ERROR_COUNT	0-1
3	PARALLEL_CS_ERROR_COUNT	0-1
4	PARALLEL_RESET_COUNT	0-1
5	MP_NET_ERROR_COUNT	0-1
6	MP_NET_RECOVERY_COUNT	0-1
7	ANIMATION_SUCCESS_COUNT	0-1
8	COMMAND_SUCCESS_COUNT	0-1
9	SYNC_SUCCESS_COUNT	0-1
10	UPDATE_SUCCESS_COUNT	0-1
11	LAST_HMT_KEY PRESS	0-0
	This key press status in not updated while the HMT is in	
	the maintenance menu set, and idles at 27 (ESCape)	
	during this time.	

## ICM Port 1 Status 0 (Byte 0-3), Bit Status -



## ICM Port 1 Status 1 (Byte 0-3), Net Online Bits -

Byte		Bit							
0	7	6	5	4	3	2	1	0	
1	7	6	5	4	3	2	1	0	
2	7	6	5	4	3	2	1	0	
3	7	6	5	4	3	2	1	0	

ICM Port 1 Status 2 (Byte 0-1), Update Error Count -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

ICM Port 1 Status 3 (Byte 0-1), Parallel CS Error Count -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

ICM Port 1 Status 4 (Byte 0-1), Parallel Reset Count -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

ICM Port 1 Status 5 (Byte 0-1), MP Net Error Count -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

ICM Port 1 Status 6 (Byte 0-1), MP Net Recovery Count -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

ICM Port 1 Status 7 (Byte 0-1), Animation Success Count -

Byte		Bit									
0	7	6	5	4	3	2	1	LSB			
1	MSB	6	5	4	3	2	1	0			

ICM Port 1 Status 8 (Byte 0-1), Command Success Count -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

ICM Port 1 Status 9 (Byte 0-1), Sync Success Count -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

ICM Port 1 Status 10 (Byte 0-1), Update Success Count -

Byte			Bit					
0	7	6	5	4	3	2	1	LSB
1	MSB	6	5	4	3	2	1	0

ICM Port 1 Status 11 (Byte 0-0), Last HMT Key Press -

Byte			Bit					
0	MSB	6	5	4	3	2	1	LSB

# 5.9 Interfacing A-B MicroLogix PLC via RS232 DF1

The following pages describe the pinout and configuration for connecting the Allen-Bradley Micrologix PLC to either an ICM-4020 or an SEM-4020 via an RS232 connection.

CTS<	d	6	1	3	RTS		DE9M:
TXD>	d	8	1	4	RECV	3	Allen Bradley
RXD<	b	6	1	5	XMIT	2	MicroLogix
RTS>	b	8	1	2	CTS		1500
Ground	Z	6	1	6	Ground	5	PLC
Power	Z	8	1	1	Power		

Media Pro 4000 ICM-4020 Port 2 Pinout (ICM Port 3 & SEM-4020 would be similar)

Connects to Allen-Bradley Micro Logix PC programming cable 1761-CBL-PM02

Cat 5 unshielded twisted pair cable is recommended for distances over 50 feet (tested to 1000')

# 5.9.1 Configuring Allen-Bradley

PC KSLinx KS252 DF1 Configuration
Configure Allen-Bradley DF1 Communications Device
Davies Names AD DE11
Device Name: AB_DF1-1
Comm Port: COM1   Device: SLC-CH0/Micro/PaneView
Baud Bate: 19200 💌 Station Number: 00
Baud Rate: 19200 Station Number: 00 (Decimal)
(Poolinai)
Parity: None   Error Checking: BCC
Stop Bits: 1 🔹 Protocol: Full Duplex 💌
Auto-Configure
Use Modem Dialer Configure Dialer
Ok Cancel <u>D</u> elete <u>H</u> elp

## C BSI inv BS232 DE1 Configuration

Note: You will need to Auto-Config initially and after reconfiguring the ML1500 Ch0

(Make these setting always match the current configuration in the ML1500) Driver: **RS232 DF1 Devices** Device: SLC/ML/PV (Ch0) Baud Rate: **19,200** (must be 19.2K for Media Pro DF1 Master Protocol) Parity: None (must be None for Media Pro DF1 Master Protocol) Stop Bits: 1 (must be 1 for Media Pro DF1 Master Protocol) Station #: **00** (This is the PC's station #) Error Checking: BCC (must be BCC for Media Pro DF1 Master Protocol) Protocol: **Full Duplex** 

Micro Logix RS232 Channel-0 DF1 Configu	1 a (1 / 0 + 2 + D W A)
Channel Configuration	x
General       Chan. 0 - System         Driver       DF1 Full Duplex         Baud       19200         Parity       NONE	
Protocol Control Control Line No Handshaking Error Detection BCC Embedded Responses Auto Detect Duplicate Packet Detect	ACK Timeout (x20 ms) 50 NAK Retries 3 ENQ Retries 3
OK Cancel	Apply Help

Required fields & formatting will vary with software.

#### Driver: **DF1 Full Duplex**

Baud Rate: 19,200 (must be 19.2K for Media Pro DF1 Master Protocol) Parity: None (must be None for Media Pro DF1 Master Protocol) Source ID: 00 (This is the ML1500's station #) Control Line: No Handshaking (must be No Handshaking for 3 wire RS232 interface) Error Detection: BCC (must be BCC for Media Pro DF1 Master Protocol) Embedded Responses: Auto Detect Duplicate Packet Detection: Enabled Timeout(s): 1000 ms (1 second) Retries: 3 Delay: 0 ms EOT Suppression: Disabled

Port Type		Baudrate		Parity				Bit				Alias		
		nc 💌			n/a		n/a		n/a					
						_	8		1					
				-		•	_	⊡	1	•				
	LC500	) 🔻				•			1	•	ML1	500-B		
		-		•	None	•		•	1	•				
Default		-	300	▼	None	•	7	$\bullet$	1	•				
2			_			_						<b>v</b>	11	Data O
600	2	N	- 1	2	0			600	)	2	Ν	•	13	0
		- F	-											
			-									•		
Comment														
/ /				_		_					_	_		_
	Maintenanc DF1 Port (S DF1 Port (S Default iguration <b>Dta From</b> <b>MP (O)</b> <b>2</b> <b>600</b>	Maintenance Port DF1 Port (SLC500 Default Default iguration Dta From Qty MP (0) Qty (W) 2 2 600 2	Maintenance Port DF1 Port (SLC500)  Default  Default  Tiguration  Dta From Qty Default  Qty Data Type 2 2 8 600 2 N	DF1 Port (SLC500)       ▼       19200         DF1 Port (SLC500)       ▼       19200         Default       ▼       300         Default       ▼       300         iguration       ▼       300         Dta From MP (0)       (W)       Data To File         2       2       B       ▼       1         600       2       N       ▼       1	Maintenance Port       19200         DF1 Port (SLC500)       ▼       19200       ▼         DF1 Port (SLC500)       ▼       19200       ▼         Default       ▼       300       ▼         Default       ▼       300       ▼         iguration       ▼       300       ▼         2       2       B       ▼       10         600       2       N       ▼       12	Maintenance Port       19200       None         DF1 Port (SLC500)       ▼       19200       ▼       None         DF1 Port (SLC500)       ▼       19200       ▼       None         Default       ▼       300       ▼       None         Default       ▼       300       ▼       None         iguration       ▼       300       ▼       None         2       2       B       ▼       10       0         600       2       N       ▼       12       0	Maintenance Port       19200       None         DF1 Port (SLC500)       ▼       19200       ▼       None       ▼         DF1 Port (SLC500)       ▼       19200       ▼       None       ▼         Default       ▼       300       ▼       None       ▼         Default       ▼       300       ▼       None       ▼         iguration       ▼       300       ▼       None       ▼         2       2       B       ▼       10       0         600       2       N       ▼       12       0	Maintenance Port       19200       None       8         DF1 Port (SLC500)       ¥       19200       ¥       None       8         DF1 Port (SLC500)       ¥       19200       ¥       None       8         Default       ¥       300       ¥       None       7         Default       ¥       300       ¥       None       7         iguration       ¥       300       ¥       None       7         Default       ¥       300       ¥       None       7         iguration       ¥       300       ¥       None       7         2       2       B       ¥       10       0         600       2       N       ¥       12       0	Maintenance Port       19200       None       8         DF1 Port (SLC500)       ▼       19200       ▼       None       8       ▼         DF1 Port (SLC500)       ▼       19200       ▼       None       ▼       8       ▼         Default       ▼       300       ▼       None       ▼       7       ▼         Default       ▼       300       ▼       None       ▼       7       ▼         iguration       ▼       300       ▼       None       ▼       7       ▼         Iguration       ■       Type       File       Data       MP (I)       2       2       8       ▼       10       0       2         600       2       N       ▼       12       0       600       600	Maintenance Port       19200       None       8       1         DF1 Port (SLC500) <ul> <li>19200</li> <li>None       8       1         DF1 Port (SLC500)          <ul> <li>19200</li> <li>None</li> <li>8</li> <li>1</li> <li>Default</li> <li>300</li> <li>None</li> <li>7</li> <li>1</li> <li>Default</li> <li>7</li> <li>1</li> <li>Default</li> <li>7</li> <li>1</li> <li>Default</li> <li>1</li> <li>0</li> <li>0</li> <li>1</li> <li>0</li> <li>0</li> <li>2</li> <li>0</li> /ul></li></ul>	Maintenance Port       19200       None       8       1         DF1 Port (SLC500) <ul> <li>19200</li> <li>None</li> <li>8</li> <li>1</li> <li>Default</li> <li>300</li> <li>None</li> <li>7</li> <li>1</li> <li>Default</li> <li>300</li> <li>None</li> <li>7</li> <li>1</li> <li>To PLC Data To MP(I)</li> <li>(W)</li> <li>10</li> <li>2</li> <li>2</li> <li>8</li> <li>10</li> <li>2</li> <li>8</li> <li>10</li> <li>2</li> <li>2</li> <li>4</li> <li>10</li> <li>2</li> <li>4</li> /ul>	Maintenance Port       19200       None       8       1         DF1 Port (SLC500)       ▼       19200       ▼       None       8       ▼       1       ▼       ML19         DF1 Port (SLC500)       ▼       19200       ▼       None       ▼       8       ▼       1       ▼       ML19         Default       ▼       300       ▼       None       ▼       7       ▼       1       ▼         Default       ▼       300       ▼       None       ▼       7       ▼       1       ▼         Iguration       ▼       300       ▼       None       ▼       7       ▼       1       ▼         10       0       2       2       8       ▼       10       0       2       2       8         600       2       N       ▼       12       0       600       2       N	Maintenance Port       19200       None       8       1         DF1 Port (SLC500)       V       19200       V       None       8       V       1       V       ML1500-A         Default       V       19200       V       None       8       V       1       V       ML1500-B         Default       V       300       V       None       7       V       1       V         Default       V       300       V       None       7       V       1       V         iguration       V       None       7       V       1       V       V         2       2       B       V       10       0       2       2       8       V         600       2       N       V       12       0       600       2       N       V	Maintenance Port       19200       None       8       1          DF1 Port (SLC500)       ▼       19200       ▼       None       8       1       ▼       ML1500-A         DF1 Port (SLC500)       ▼       19200       ▼       None       ▼       8       ▼       1       ▼       ML1500-A         Default       ▼       300       ▼       None       ▼       8       ▼       1       ▼       ML1500-B         Default       ▼       300       ▼       None       ▼       7       ▼       1       ▼         Iguration       ▼       300       ▼       None       ▼       7       ▼       1       ▼         Type       To       PLC       Data       To       Qty       Data       From         MP (0)       (W)       Type       File       Data       MP (I)       (W)       Type       File         2       2       B       ▼       10       0       2       2       8       11         600       2       N       ▼       12       0       600       2       N       ▼       13

Media Pro 4000 ICM-4020 Port configuration (SEM-4020 would be similar)

Port 2 and/or 3 can be used for DF1, only one port is necessary per PLC

Port Type: DF1 SLC 500 (not DF1 PLC5, not DF1 Slave)

Baud Rate (19.2k), Parity (None), Data Bits (8), Stop Bits (1), Error Correction (BCC): All Hard Coded

Data From Media Pro Output (channel base): 2 (choose the 1st output ch you want to send to the PLC)

quantity of contiguous sending Words: 2 (64 max, the PLC file must be the same size or larger) Data Type: **B** (set to the desired file type in the PLC)

To File: **10** (set to the desired file number in the PLC)

PLC Data: **0** (offset into PLC file)

Data To Media Pro Input (channel base): 2 (choose the 1st input ch you want to receive from the PLC)

quantity of contiguous received Words: 2 (64 max, the PLC file must be the same size or larger)Data Type: **B** (set to the desired file type in the PLC)

To File: **11** (set to the desired file number in the PLC)

PLC Data: 0 (offset into PLC file)

Note: Maximum Data transfer rate is approximately 10 times a second. The quantity of words sent & received may slow this down.

Data File Properties 🛛 🛛 🛛
General
File: 10
Туре: В
Name: FROM MP4
Desc: FROM MP4000
Elements: 2 Last B10:1
Attributes
Debug
F Skip When Deleting Unused Memory
Scope
© <u>G</u> lobal
C Local To File: LAD 2 -
Protection
🖸 Constant 🔿 Static 🔍 Mone
F Memory Module / Download
OK Cancel Apply Help
Data File Properties X
General
General File: 11
File: 11
File: 11 Type: B
File: 11 Type: B Name: TOMP2
File: 11 Type: B Name: <b>TO MP4</b> Desc: <b>TO MP4000</b>
File: 11         Type: B         Name:       TO MP4         Desc:       TO MP4000         Elements:       2       Last:
File: 11 Type: B Name: TOMP4000 Desc: TOMP4000 Elements: 2 Last: B11:1
File: 11 Type: B Name: TOMP2 Desc: TO MP4000 Elements: 2 Last: B11:1 Attributes T Debug
File: 11 Type: B Name: TOTMP4 Desc: TO MP4000 Elements: 2 Last: B11:1 Attributes Debug Skip When Deleting Unused Memory Scope © Global
File: 11 Type: B Name: TO MP2 Desc: TO MP4000 Elements: 2 Last. B11:1 Attributes Debug Skip When Deleting Unused Memory Scope
File: 11 Type: B Name: TOTMP4 Desc: TO MP4000 Elements: 2 Last: B11:1 Attributes Debug Skip When Deleting Unused Memory Scope © Global
File: 11 Type: B Name: TOMP4000 Elements: 2 Last: B11:1 Attributes Debug Skip When Deleting Unused Memory Scope Global Local To File: LAD 2-
File: 11   Type: B   Name:   Desc:   TO MP4000   Elements:   2   Last:   B11:1   Attributes   Debug   Skip When Deleting Unused Memory   Scope   © Blobal   © Local   To File:   LAD 2-   Protection

Logiv B File Configuration

Note: The number of elements (words) must be equal to or larger than the size requested by the MP {or the PLC will get errors, the data will be undependable, and the communications ragged}.

	ingulution
Data File Properties	×
General	
File: 12	
Type: N	
Name: FROM MP4	
Desc: FROM MP4000 #2	
Elements: 2 Last: N12:1	
Elements: 12 Last. 1912.1	
Attributes	
Skip When Deleting Unused Memory	
Scope	
• <u>G</u> lobal	
C Local To File: LAD 2 -	Y
Protection	
O Constant O Static O None	
Memory Module / Download	
OK Cancel	Apply Help
	Apply Help
Data File Properties	×
General	
File: 13	
Type: N	
Name: TO MP4	
Desc: TO MP4000 #2	
Elements: 2 Last: N13:1	
Attributes	
□ Debug	
Skip When Deleting Unused Memory	
Scope	
<ul> <li>Global</li> </ul>	
C Local To File: LAD 2 -	Y
Protection	
Protection	
Protection           C Constant         C gtatic         C Mone           □ Memory Module / Download	
O Constant O Static O None	Ápply Help

#### Micro Logix N File Configuration

Note: The number of elements (Words) must be equal to or larger than the size requested by the Media Pro® {or the PLC will get errors, the data will be undependable, and the communications ragged}

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# Section 6 – Appendix

The following pages contain technical briefs relating to this module. There are additional technical briefs on the ASI website and new briefs are added on an ongoing basis. Please visit the website for updated information -

## http://www.Anitech-Systems.com

Updated manuals are placed on the Web periodically. Please check to see if a more recent revision is available on the website. Revision numbers are located in the footer of the manual pages.

Also, a glossary of terms is in this section, for terms used by ASI as well as terms used in the Show Control Industry.

# 6.1 Saving Files from a Web Page without Displaying -

This is useful for retrieving a non-formatted page that is not intended for viewing:

#### From Internet Explorer® Browser

- 1 Saving files from a Web page.
  - A) To save a file without opening it:
    - Right-click on the link for the item you want, a pop-up menu appears,
       (a) Select, then Left-click Save Target As
      - (b) Enter the desired folder and filenames and select Save

#### From Netscape® Communicator Browser

- 1 Saving files without displaying them.
  - A) To save a file without viewing it:
    - 1) **Right**-click on the file's link to display a pop-up menu,
      - (a) Select, then Left-click Save Link As
      - (b) Enter the desired folder and filename and select **Save**

# 6.2 HandHeld Maintenance Terminal Operations Guide

The following information is provided for the use and operation of the HandHeld Maintenance Terminal.

# 6.2.1 Introduction

A HandHeld Maintenance Terminal (HMT) connected at the front panel of an ICM provides access to system information, status, and control services that would otherwise require hundreds of switches and indicators. By means of the Media Pro® Network, the HMT provides access to every resource in the system. With the menu system supported by the firmware in the ICM, it becomes a 'virtual' display and control panel for the entire Media Pro® system.

Because the display size of the HMT is limited (4rows of 20 characters), menus are used to permit selection of the section of the 'control panel' which is of current interest. When the ICM is turned on or reset, or the HMT is first plugged in, a sign-on message is presented giving the firmware version. After a few seconds, the HMT presentation switches to the 'Show Display', which is the destination of DISPLAY commands in the Media Pro® cues. Other 'virtual' screens can be accessed by the user with the 'navigation' keys. These keys are listed shortly below.

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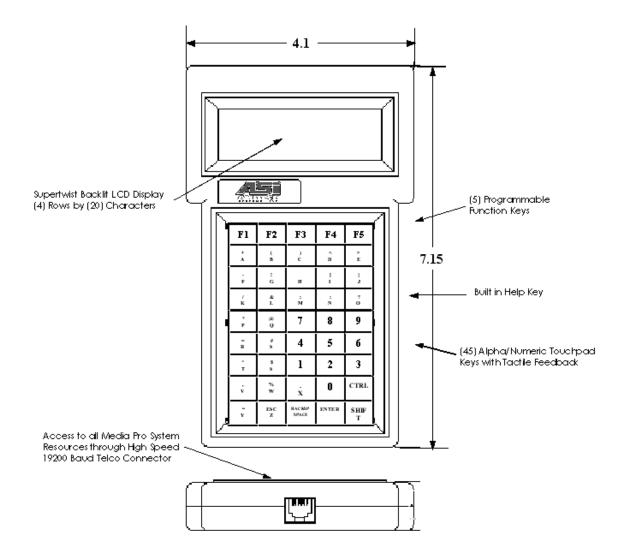


Figure 6-1. HandHeld Maintenance Terminal

# 6.2.2 The 'Show Display'

A powerful feature of the Media Pro® 4000 is that the show programmer can write 'DISPLAY' statements into the MPCL cues, and thereby put show status and other information onto the HMT for examination during show operation. Typical uses are to put up a show version during the entry day mode, or to signal that certain cures are active or inactive; and, the HMT show display is extremely valuable while 'debugging' cues and show operation.

As mentioned above, the show display is posted just a few seconds after the system is powered on, or after the HMT is plugged in. To get into the menu system, the user enters an ESC, which goes to the 'top menu'. To return to the show display, the user gets to the top menu by pressing ESC, then uses ENTER to move right, accepting the invitation GO TO SHOW DISPLAY.

The show display is maintained in the master ICM (rack 00), and its update is independent of whether an HMT is plugged in or not. When the HMT is finally attached, the current show screen will be posted, then updated regularly. The show display is also available with the MP4000 software, by clicking on the 'HMT Enable' window.

The show display is broadcast to all the slaves, and is presented there just as at the master rack.

## 6.2.3 Menu Navigation

The menu system available on the HMT is to be considered as a two-dimensional array. A 'to menu' is at the upper left, at the top of the 'select stack', used to choose among the resources available for inspection and control. Downward travel at this level cycles through the various choices, and 'hotkeys' can jump directly to a desired level. Some of the select menus require filling in 'edit fields' to specify a particular resource, for example, choosing variable 4 (V004).

Rightward motion from any menu is with the ENTER key. From the 'select stack', ENTER always goes to the inspection level – information can be viewed, but no resource can be modified. At this inspection level, pressing ENTER will move to the 'control' level. This is the final level, and can only be entered if the password has been provided (more later).

At the inspection and control levels, downward motion is by menus of F5, the 'menu down' key (more below) and moves to other menus that provide information or control for the resource selected at the 'select stack' level. If there are several menus pertaining to the resource, repeated 'menu downs' will cycle through them repeatedly, and (usually) F4, the 'menu up' key, will cycle through the resource set backwards. (The F4/up exceptions are usually in 'help' menus.)

# 6.2.4 Navigation Keys

The navigation keys are F1, F2, F3, F4, F5, ENTER, SPACE, BKSP, ?, and ESC. The ESC key is special: when pressed, the menu presentation is always moved to the 'top menu', even from the 'show display', providing the entry to the menu system. On some menus, especially at the control level, other keys are active and have particularly control effects usually described on the menu.

The Function Keys are defined as follows:

F1 = cursor left F2 = cursor right F3 = Tab (next field) F4 = menu upF5 = menu down.

F1, F2, and F3 are for movement in and among editable fields on the screen (if there are no editable fields, these keys do nothing). The 'column left' key (F1) & 'column right' key (F2) move the cursor by columns in the editable fields. The TAB key (F3) always moves forward to the next editable field (there is no reverse-tab, nor any vertical field moves).

F4 and F5 are for vertical motion in menu sets at a given level, as already described above.

The <ENTER> key is used to move right to the inspection and control levels. In some cases, the effect of the <ENTER> key will depend on the content of editable fields on the screen at the time, as in the selection of a rack, slot, and port. In control menus, the <ENTER> key will cause the acceptance and actuation of the data on the screen, but return to the same screen.

## 6.2.5 Data Fields

At the inspection level and in many cases at the control level, the presentation is updated continuously – if the value changes in the system, the HMT will report the new value. This is valuable for watching the status of cue and variables, etc., and the output values of IOMs and ASMs. The update is automatic, even if the source of the data is in another rack. Updates are as frequent as it is noticed that the data value is changed – up to 30 times per second if the resource is in the same rack as the HMT. Possibly slower from other racks, since messaging in support of HMT displays is given less priority than messaging that supports the operation of the show.

# 6.2.6 Edit Fields

Several of the 'select stack' menus contain edit fields that specify the resource of choice. PORTS, MODULES, CUES, VARIALBLES, INPUT BYTES, AND OUTPUT BYTES must be picked by entering numbers onto the menu. Also, at the control level, new values are placed into edit fields before the ENTER button does the actuation. Edit fields are distinguished from data fields in that a cursor will appear in the first edit field when the menu is posted, and the TAB key <F3> will move the cursor to any additional edit fields on then menu.

Edit fields are filled by pressing the desired keys on the HMT. These will be place into the edit field (generally) at the position where the cursor is blinking. When a field is filled, the cursor will be positioned automatically at the beginning of the next edit field (or, if there is only one, at its start). The value keyed into a field is checked at the last digit, and will be set to zero if the value was out of range.

In an edit field, the  $\langle F1 \rangle$  and  $\langle F2 \rangle$  keys will cause the cursor to be repositioned in the previous or next column. With the cursor in a column, the  $\langle + \rangle$  and  $\langle - \rangle$  keys (it is not necessary to shift these keys) cause that column to increase and decrease, unless the resultant value would be out of range. This feature is useful in the control menus, where a port value can be 'jogged' using these keys.

In specifying ports, five edit fields are involved: rack, slot, port, 'dot', and bit. Only the first three are presented routinely in the select menu: Rrr,ss,pp with the 'dot' and bit fields left off. Using the  $\langle F3 \rangle$  TAB key to advance through the fields, or finishing the manual entry of 'port', the cursor will be located in the 'dot' field just right of the 'port' field. Pressing the period (.) or 'X' key will cause the 'dot' field to appear, and the cursor will be positioned in the bit field, now also visible. To undo the bit reference, use  $\langle F3 \rangle$  TAB to again position the cursor over the 'dot', and press the (.) or 'X' key again. The 'dot' and bit fields will disappear.

# 6.2.7 Help

The question mark key <?> can be used on any menu except the show display. This will cause a menu showing related help to appear, and the 'menu down' and 'menu up' keys can be used to access additional screens of help text.

Generally, using 'menu down' will go to additional information that is still specific to the menu from which the request was made, and 'menu up' will shift out to help about navigating the menus. From a help menu, using the question mark <?> again will go to 'help on help'.

The ENTER key from a help menu (if the user has not wandered too far), will go back either to the previous menu, or eventually to the 'top menu'.

# 6.2.8 Resource 'Walking'

At the inspection or control levels, using the 'menu down' and the menu up keys will cause cycling within the list of information (or control) menus available for the selected resource. However, it is often useful to 'walk' to other similar objects without going back to the select stack to re-key the selection.

The SPACE key will serve to move the next similar resource, and BKSP will move to the previous similar resource. For example, at the inspection level for cue 5 (Q005), the SPACE key will step the display to cue 6,7,etc., and BKSP will step the display to cue 4, 3, etc.

The exception to this procedure is that, if at the control level, SPACE and BKSP will first step back to the inspection level for the chosen current resource.

### 6.2.9 Password

The MP4000 software permits designating a password (up to 15 alphanumeric characters) that is downloaded to the ICMs with their configuration. If no password is specified, then entry to the control level in the menu system is unimpeded. However, if a password is specified, then entry to the control level is not possible until the user has given the correct password.

The password menu is at the control level of the SYSTEM select. The user enters the password directly, but it is not echoed to the HMT (the text of 'Anitech Systems' is echoed, instead, to obscure the vision of any observer). After putting in 1 to 15 characters, press <ENTER>, and the top menu is presented again. A successful password will give access to the Control Level menu.

After a password has been entered, timers are started that cause the password to expire in one minute, except that this time is extended indefinitely as long as any keys on the keypad are used. The password will even survive forays to the show display. If the user wants the password canceled immediately, this can be done by simply pressing ENTER at the password menu without entering any characters (or, enter a few characters that are NOT the password).

There is no 'back door' around the password; if it is forgotten, it is gone, unless the user has access to the original show files under MP4000. So please do not call us about this.

### 6.2.10 Control Level Keys

On some Control Level menus, with or without edit fields, additional keys on the HMT keypad become active. These are signaled on the menu or in the help. For example, in the cue control menu, the prompt "P/play S/stop R/reset" appears at the bottom of the menu, indicating that the keys P, S and R will provide the indicated control.

### 6.3 Menu Matrix

The menu array is shown in figure 6-2. It shows the Top Level menu and the subsequent Selection Level and Inspect Level menus. In some functions, there are more than one Inspect Level menu. The layout of the menus is generic in the example and subtle variances will occur, depending on the configuration of the rack. A quick review of navigation and menu manipulation follows:

- Upon power up, the unit does a quick self test, then places the ICM version on the HMT display for a few seconds. Then the screen displays the results of the most recently executed DISPLAY command from the cue. If none has been executed, the display is blank and has a blinking cursor at the top left corner.
  - Pressing <shift> <ESC> will go to the Top Level Menu from any menu.
  - > F5 (down) will go down to the next Select menu in the matrix.
  - > F4 (up) will go up to the next Select menu in the matrix.
- ◆ The Top Level Menu will go the Show Display when <ENTER> is pressed.
  - > This Inspect menu will display the results of the most recently executed DISPLAY command from the cue.
  - It is the same information that is displayed on the upper left section of the ICM Cue Edit Menu.
- ✤ There are HOTKEYS for maneuvering through the menus.
  - > Pressing a HOTKEY from any Select menu, will go directly to that menu in the matrix.
  - > HOTKEYS only work from the Select level menus.
    - D = Display
    - $\mathbf{P} = \text{Port}$
    - M = Module
    - Q = Cue
    - V = Variable
    - I = Input Byte
    - **O** = Output Byte
    - A = Animation
    - S = System
    - R = Reports
- ✤ To go to the Inspect Level menu, press <ENTER>.
  - From the Inspect menu, press <shift> <ESC> to go back to the Top Level menu.
  - From within the Inspect menus, for example the Cue menus, the <SPACE> key will go forward to the next cue.
  - Pressing <shift> <BACKSP> will go to the previous cue.
- ✤ A blinking cursor indicates a field may be changed.
  - > Type in the correct information and press <ENTER> to accept.

Figure 6-2. Menu Matrix	Select Level		Inspect Level
$D \to$	TOP MENU Select: ?=help GO TO SHOW DISPLAY - (this is rack# 00) ENTER.PMQVIOASR.?.F5	ENTER	SHOW DISPLAY [the most recently executed DISPLAY command results will be shown here]
F5(DOWN) $\downarrow$		From any r goes to To	nenu, p Level Menu
$P \rightarrow$	Select: ?=help SELECT PORT - R00,00,00 xxM40n0 ENTER.DMQVIOASR.?.F5	ENTER	R00,00,00 ××M40n0 PORT VALUE Och 00000000b
F5(DOWN) $\downarrow$			
$M \to$	Select: ?=help SELECT MODULE - R00,00 xxM40n0 ENTER.DPQVIOASR.?.F5	ENTER	R00,00,00 xxM40n0 PORT VALUE Och 00000000b
F5(DOWN) $\downarrow$			
$Q \to$	Select: ?=help SELECT CUE 0000 ENTER.DPMVIOASR.?.F5	ENTER	CUE 000 hh:mm:ss.ff -state- hh:mm:ss.ff rrrrrrrr event#!eee
F5(DOWN) $\downarrow$			
$V \rightarrow$	Select: ?=help SELECT VARIABLE - V000 ENTER.DPM0IOASR.?.F5	ENTER	VARIABLE 000 000000000 00000000 W/Cue 000000000
F5(DOWN) $\downarrow$			
$I \rightarrow$	Select: ?=help SELECT INPUT BYTE - I0000 ENTER.DPM0VOASR.?.F5	ENTER	INPUT Byte 0000 Value 00h 00000000 W/Cue 00000000
F5(DOWN) $\downarrow$			
$0 \rightarrow$	Select: ?=help SELECT OUTPUT BYTE - 00000 ENTER.DPMOVIASR.?.F5	ENTER	OUTPUT Byte 0000 Value 00h 00000000 w/Cue 00000000
F5(DOWN) $\downarrow$			
$A \to$	Select: ?=help SELECT ANIMATION - A000 ENTER.DPM0VIOAR,?,F5	ENTER	STUBBED MENU Not yet implemented
F5(DOWN) $\downarrow$	ENTERIDEDEVIONR: ** FJ		
S →	Select: ?=help SELECT SYSTEM	ENTER	ShowNameScrollsHere\ ShowCommentScrollsHe Dd/mm/yy hh:mm:ss
	ENTER.DPMQVIOAR.?.F5		Dd/mm/yy hh:mm:ss
F5(DOWN) $\downarrow$	, , , , , , , , , , , , , , , , ,		
$R \rightarrow$	Select: ?=help SELECT REPORTS	ENTER	Anitech Systems Inc. Media Pro 4000 3220120H 04/06/00 00
F5(DOWN) ↓ Returns to Top	ENTER.DPMQVIOAS.?.F5		ICMBT231 03/04/98

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# 6.4 Termiflex Handheld Setup

If the 'handheld' terminal does not behave as outlined in the introduction, it may need to be set for the proper communications and operations parameters before it can be used in the Media Pro 4000 system. The terminal itself has a menu system that is used as follows for setup:

- 1 Press CTRL and release, then press SHIFT and release, then press SPACE and release. The terminal will display its MAIN MENU.
- 2 Press F1 to choose the COM (communications) setup menus.
- 3 Using F1 (previous), F2 (next), adjust the baud rate to 19.2K.
- 4 Use F4 (continue) to move to the next item, parity.
- 5 Using those keys, then, set the following parameters:
- BAUD RATE 19.2K
- PARITY none
- DATA, STOP BITS 8,1
- DISP SERIAL ERRORS no
- AUD SERIAL ERRORS yes
- SUPPORT XON/XOFF no
- 6 From the MAIN MENU, choose the DSP (display) and KBD (keyboard) and setup the following:
- DISP CTL CHARS no
- DISP ESC CHARS no
- CURSOR VISIBLE yes
- AUTO LINE WRAP no
- NEW LINE ON CR no
- DISPLAY SELF TEST yes
- BACKLIGHT LEVEL 7
- BACKLIGHT ON yes
- LOCAL ECHO no
- KEY REPEAT slow
- AUDIBLE KEYS no
- SIMPLIFIED KB no
- 7 In the keyboard setup menu, when you reach the PROGRAM FUNCTION KEY menu, press F5 (MAIN} and return to the top menu. Then press F5 (EXIT), press F1 (YES), to store changes, the F5 (EXIT) one last time.

# 6.5 Two Technologies Handheld Setup

If the Two Technologies 'handheld' terminal does not behave as outlined in the introduction, it may need to be set for the proper communications and operations parameters before it can be used in the Media Pro 4000 system. The terminal itself has a menu system that is used as follows for setup:

Press <SHIFT> and <CTRL> simultaneously. While continuing to press them, press F1. The terminal will display its SETUP PARAMETERS MENU.

Use F2 to move forward through the parameter selections, F3 to move back.

For each parameter, a range of values is possible – the various values are displayed consecutively as the F1 key is pressed repeatedly. To select or accept the displayed value for the parameter, simply use F2 or F3 to move on to another parameter.

These are the values to select for each parameter:

$\succ$	BAUD RATE	19200
$\triangleright$	DATA BITS	8
$\geqslant$	PARITY	NONE
$\triangleright$	STOP BITS	1
$\succ$	CHARACTER REPEAT	SLOW
$\triangleright$	KEY CLICK	ENABLED
$\triangleright$	KNP FUNCTION	DISABLED
$\triangleright$	CURSOR	ENABLED
$\triangleright$	CURSOR BLINK	ENABLED
$\triangleright$	XON/XOFF	DISABLED
$\geqslant$	HANDSHAKING	ENABLED
$\geqslant$	ECHO	DISABLED
$\geqslant$	ESCAPE MODE	PRIVATE
$\geqslant$	CR/LF MODE	NORMAL
$\geqslant$	SELF TEST	ENABLED
$\geqslant$	SHIFT LOCK	DISABLED
$\geqslant$	SCROLL	81
$\geqslant$	VIEW ANGLE	MAX
$\geqslant$	BREAK CMND	DISABLED
$\triangleright$	BACKLIGHT	ON (see note)

When finished assigning values to all the parameters, press F5 to save the values to memory and leave the SET PARAMETERS MENU.

BACKLIGHT note: the illuminator draws considerable current. If the terminal will be used through more than a hundred feet of cable, the backlight should be set to OFF.

# 6.6 Wiring and Interconnect Considerations

Some of our clients are using the rear-DIN HMT connections from the ICM for cabling to outlets in the show areas. Since the terminal operates at 19200 baud, it is important that the cable, routing, and interconnect do not adversely affect communications with the HMT.

We have shown operation with 1000 feet of CAT-5 cable, end-to-end. At the baud rate used, cable capacitance is a major concern, and any lesser quality cable should not be trusted more than a few dozen feet from the driving ICM.

Also, using 'star' and/or 'multi-drop' distribution arrangements can severely impair the quality of the cable plant. For installations with very many outlets and long runs, users should consider using a patch facility to avoid the complex configurations, and provide an essentially end-to-end operation for every outlet in the show area.

<u>Note</u>: the handheld access is often associated with placements also intended for use with the animation console over the Media Pro network. The animation console is even less tolerant of star, multi-drop, and termination issues than the HMT – thus, facilities (such as patch panels) for dealing with the animation consoles can easily include provisions for the handheld terminal interconnect.

Finally, remember that environments with high amounts of electrical noise will affect the operation of the HMT and its interconnect. Communications cables should not be run in close proximity to noise-sourcing cables or to power equipment, and should be protected against being damaged.

# 6.7 Cue & Scene Control through the Monitor Port

A PC can't really be used as a complete HMT without a lot of programming. {VT-52 emulation display & Key strokes}

HyperTerminal can be setup for VT-52 Emulation, but it does not seem to work quite the same (or as well) as the implementation used in the "Industrial Hand Held Terminals". However, a PC is able to Play/Stop/Reset Cues easily please read the description below. (Note: for IMC4010 & IMC4020, check with Anitech for implementation versions)

The description below refers to Firmware versions 3220116P and later.

### CUE PLAY, STOP, AND RESET

The command PQ (Play Cue) followed by a number will start a cue, provided it has been successfully downloaded. The number is expressed in decimal format, 0 to 511. Leading zeros are permitted but not necessary. Spaces after the PQ and before the number are also permitted. The PQ may be lower case.

If the cue does not exist, there is no effect; if the cue is already playing there is no effect. In either case, there is no indication returned on the display.

The command SQ (Stop Cue) followed by a number will stop a cue. All the provisos as stated from above for PQ apply here also.

When a cue is stopped, it is merely suspended and its state does not otherwise change. If PQ is used to start the cue (or a command from another running cue, or a cue-control becoming active), the cue resumes where it left off. If it was in a delay or a wait, this continues after the cue is restarted.

The command RQ (Reset Cue) followed by a number will reset a cue. All the provisos stated from above for PQ apply here also.

When a cue is reset, it is stopped AND any delay or wait in progress is cancelled, and the cue event pointer is set to the first event in the cue. Thus, when the cue is started again, it plays from the top.

### ANIMATION PLAY, STOP, AND RESET

A format, exactly parallel to the commands (stated above) for playing, stopping, and resetting cues, is provided for control of 'animation scenes'. The format is, for example:

- PA8 (Play animation 8)
- SA17(Stop Animation 17)
- RA12 (Reset Animation 12).

### INTERNAL ICM STATE AFFECTS ABILITY TO SEND COMMANDS

Note that these commands are executed only if certain conditions within the ICM are met. Among these are that the menu system must be presenting the show screen, if a handheld is attached. Also, within a few seconds of an ordinary protocol message, the port will ignore any non-protocol presentations.

If an external device is used to transmit these commands (as opposed to typing them from the handheld keypad), the port will be in the correct state after ICM startup is complete. However, the communicating device should NEVER send an ESC character, and should NOT echo any characters that are sent from the ICM's monitor port.

The communicating device must be able to tolerate the ICM's poll for the handheld, which is an 0x05 character sent about once per second.

# 6.8 Power Specification for Continuous Normal Operation

The power usage and requirements for Media Pro® modules are depicted in the following table. It is important that <u>both</u> of the following considerations are evaluated for proper system configuration:

- ✓ The power usage of the modules does not exceed any *individual* maximum current and wattage.
- ✓ The sum of the modules do not exceed the supply *overall* maximum wattage.

		<u></u>				
Voltage	Current R	equirement	s (Amps)	Wattage	e Requiremer	nts (VA)
DC	Min	Typical	Max	Min	Typical	Max
+ 5	0.550	0.800	1.050	2.75	4.00	5.3
+ 12	0.010	0.090	0.230	0.12	1.08	2.8
- 12	0.010	0.015	0.030	0.12	0.18	0.4
+ 24	0.010	0.015	0.030	0.24	0.36	0.7
				3.2	5.6	9.

### ICM-4020, PCB 11045-A

# 6.9 ICM Backplane Timing Upgrade Hardware Modification

This brief is intended for the Module: ICM-4020, 11045-A (OCT-97 PCB). Refer to the board revision level on the lower left side of the module. See layout, section 2.3.

# Note: Perform this modification ONLY if you are certain that you have the correct revision.

1) ICM-4020, PCB# 11045-A, OCT 97 PCB, ONLY

2) Locate U42, 74ACT32.

3) Cut ONLY pin 9 of U42 (IC chip), so that the pin will NOT be connected to the pad/hole in the PCB.

4) Solder a jumper wire from pin 9 of U42 (IC chip), to pin 4 of U42 (IC chip).

5) The jumper wire should be routed under the IC chip (U42), so that is will not be visible.

# 6.10 Downloading New Version of Firmware to a Module

There may be circumstances where the firmware version of a module may need to be upgraded in the field. The information in this section will describe the process of downloading a new version of firmware from the Anitech Systems website and installing it into the module.

### Verify Current Version -

- ✓ Open the MP4000 software.
- ✓ Click on the desired module.
- Module firmware versions are displayed in the Device Information section of the screen.

#### Download Firmware Code From Website –

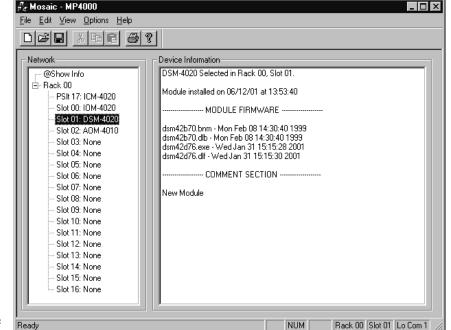
Visit the Anitech Systems website:

www.anitech-systems.com

- Click on the Support link.
- Scroll to the correct module type.
- Highlight and select the Firmware column.
  - Select the correct module version.
    - Select the appropriate sub-file, this is dependant on the module revision level. (Refer to File Name Conventions in the Media Pro® 4000 manual, section 5.2.1, for a detailed explanation of firmware file names.)
    - When the file is selected, it needs to be saved to the disk. Since browsers vary, refer to the brief, "Saving Files from a WebPage without Displaying " in Section 6.1 of this manual.
      - Enter the Directory and Filename information on the pop-up Menu and press the Save button. The file will be saved to the disk.
- ✤ Also, carefully read the most recent ReadMeMP.txt. It is found on the website at the following address:

http://anitech-systems.com/MP4000/manual/briefs/ReadMeMP.txt

> Exit the Website.



#### Return to the MP4000 Software -

- Note: Before attempting to download the firmware to a module, place the switch on the ICM front panel to the **Test** position. This will enable the rack to download faster and with minimal interference. Placing the switch in the test position affects the racks as described below:
  - Rack 0 (master) Allows the Rack to concentrate on the download information. Quits the cues and animation from running and stops the broadcast over the MP Net.
  - Other Racks (slaves) Still receives the information, but ignores it while the download is being performed.
  - **NOTE:** When downloading to a slave rack over the MPNet, turn the <u>Rack 0 ICM</u> switch to the Test position in order to minimize interference and enable a successful download.

File name:

Files of type:

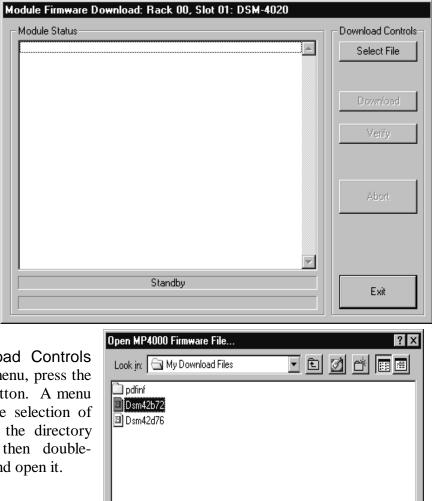
Dsm42b72

MP4000 Firmware Files(\*.cod)

- ♦ Open the MP4000 software and select the Showfile.
- Highlight the module desired and left click. The module's information is displayed in the Device Information section.
  - Select OPTIONS from the Menu bar across the top of the MP4000 Menu screen.
    - From the scroll down menu, highlight and select MP4000 FIRMWARE.

The Download menu appears.

• In the Download Controls section of the menu, press the **Select File** button. A menu pops up for the selection of the file. Find the directory and filename, then doubleclick to select and open it.



•

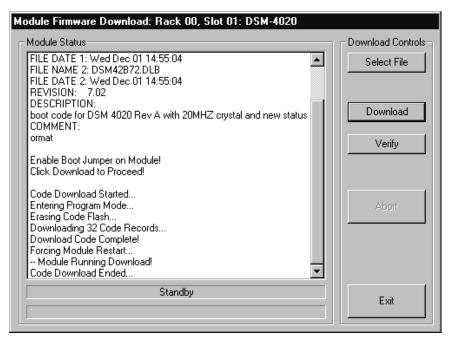
<u>Open</u>

Cancel

#### Install the firmware Code in the Module -

- The download screen reappears and displays the firmware information in the Module Status section of the screen.
- Be Certain to Read the Description & Comment sections of the firmware information for considerations and restrictions of use.
- Refer to the ReadMeMP file found on the Website.
- Press the Download button to proceed, or Exit to abort the operation.
  - Once the Download has started, messages appear on the screen to detail the process that is taking place. When it is finished, Code Download Ended message is displayed.
- It is recommended to run a verify after the download on modules that have the option available. Press the Verify button and watch for the Code Verify Ended Message.
  - If another download is necessary, then press the Select File button and repeat the download process for the next file needed.
  - Press the Exit button to end the download process.

Module Firmware Download: Rack 00, Slot 01: DSM-4020 Module Status Download Controls OPENING CODE FILE: C:\My Download Files\Dsm42b72.cod ۵. Select File DRAWING: 11042A FILE NAME 1: DSM42B72.BNM FILE DATE 1: Wed Dec 01 14:55:04 FILE NAME 2: DSM42B72.DLB Download FILE DATE 2: Wed Dec 01 14:55:04 BEVISION: 7.02 Verify. DESCRIPTION: boot code for DSM 4020 Rev A with 20MHZ crystal and new status COMMENT: ormat Enable Boot Jumper on Module! Click Download to Proceed! 7 StandBy Exit



The new versions of the firmware will be displayed in the Device Information Pane of the MP4000 menu.

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# Glossary

ALIAS	English representation contained within single quotes that references an object.
.ani	Extension used for Animation files.
ASCII	A numeric code used by computers to represent characters.
BIT	A single logical or physical resource that can be either ON (true, 1) or OFF (false, 0).
COMMENT	Text following a semicolon on an event line within a cue, it is used to annotate the cue.
COMPLIANCE	Additional feedback applied according to the equations in the firmware and parameters supplied by the user that tends to reduce the output signal.
CONST	Constant
CONTACT CLOSURE	Completes a circuit. A voltage is applied to a reference pin of a bit's connector. When the switch is closed, the voltage is returned on another wire to the same bit, completing the circuit. When the switch is closed, the I/O pin gets voltage.
CUE	A list of up to 512 EVENTS containing verb, object, token, and variable items.
db	Decibel
DSP	Digital Signal Processor
E/S	Emergency Stop
EVENT	A single line of verb, object, token and parameter items contained in a CUE.
FET	Field Effect Transistor - an electronically controlled switch.
FLASH	Fast, electrically erasable, and programmable in the circuit non-volatile memory devices.
FW	Firmware
HMR	Horizontal Module Rack

HW	Hardware
ICM	Intelligent Controller Module.
I/O	Input/Output.
IOM	Input/Output Module.
JUMPER	Push-on jumper, shunt - a small (approximately $\frac{1}{4}$ " x $\frac{1}{8}$ " thick) piece of plastic with a metal insert. The jumper is set by pushing it down over a pair of pins.
KEY	A piece of hardware that keeps a module from being plugged into a slot that is wired and keyed for a different kind of module.
LABEL	A name, followed by a colon on a line of a CUE, used for a forward or backward jump.
LED	Light Emitting Diode (indicator, light, lamp).
MIDI	Musical Instrument Digital Interface. Files that have music / sound information.
MPCL	Media Pro® Control Language.
OBJECT	Term used to reference a resource within the Media Pro® system.
OFF	False, 0, Open.
ON	True, 1, Closed.
PARAMETER	The item that follows a token. The list of parameters is in section 3 of the MP4000 User's Operation Manual.
PLC	Programmable Logic Controller.
PORT	A resource on a module in case of the DSM. There are 2 ports.
P-P	Peak to Peak.
RACK	A card cage containing Media Pro® 4000 Modules.
RESOURCE	A controllable device connected to or contained within the Media Pro® 4000 system.
RMS	Root Mean Squared.

- **SLOT** A physical location in a RACK that contains a Media Pro® Module.
- **SMPTE** Refers to Society of Motion Picture & Television Engineers, and the standard for timing signals set by this group.
- **STRING** A collection of alphanumeric characters contained in double quotes, used with the DISPLAY command.
- SW Software.
- **THD & N** Total harmonic distortion and noise.
- **TOKEN** Reserved words for modifiers of the VERBs used in a cue event. The list of TOKENs is in section 3 of the MP4000 User's Operation Manual.
- **TYPE**The kind of OBJECT being referred to in a direct addressing statement.<br/>The list of TYPEs is in section 3 of the MP4000 User's Operation Manual.
- VAC Volts Alternating Current.
- **VARIABLE** A 32-bit value that can contain a number used in a cue line. A variable may be assigned an ALIAS. There may be a maximum of 512 variables per cue.
- **VDC** Volts Direct Current.
- **VERB** Reserved words for the actions used in a CUE EVENT. The list of VERBs is in section 3 of the MP4000 User's Operation Manual.
- **VMR** Vertical Module Rack.
- .wav Extension used for WAVE files, contains sound data.
- **Z-RAILS** Two Z-shaped rails on the back of the rack, adjacent and parallel to the space for the I/O connectors on the Modules when the modules are inserted. The field connectors attach to the Z-rails.